2009

Pre-Service Teachers' Self-Efficacy and Instructional Tactics: The Impact of Pre-Service Teachers' Perceptions of Self-Efficacy in Relation to Instructional Tactics: A Sequential Study

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PRE-SERVICE TEACHERS‟ SELF-EFFICACY AND INSTRUCTIONAL TACTICS

THE IMPACT OF PRE-SERVICE TEACHERS‟ PERCEPTIONS OF SELF-EFFICACY IN RELATION TO INSTRUCTIONAL TACTICS: A SEQUENTIAL STUDY

Presented

in partial fulfilment of the requirements of:

Master of Education (Honours)

to the Faculty of Education,

Avondale College

26 October, 2009

Beverly June Christian
Dip Tch, BEd (Primary)

STUDENT DECLARATION

I, Beverly June Christian herby declare that:

(i) this thesis is my own work,

(ii) all persons consulted, and all assistance rendered are fully acknowledged

(iii) all references used are indicated in the text and accurately reported in the list of references,

(iv) the substance of this thesis has not been presented, in whole, or part by me, to any University for a degree.

Date:_____ Signature:_____

ACKNOWLEDGEMENTS

This project would never have happened if not for the valuable support of the following individuals. To you, I offer my appreciation.

Thank you Peter Morey, for helping me to clarify my ideas and direction and for teaching me the language of research.

Many thanks also to Jean Carter who is a great motivator and proof reader, and always managed to give feedback promptly.

To Peter Beamish, the Dean of Education, who facilitated this research by lightening my teaching load, and having faith in my ability.

To staff in the Faculty of Education, who are always positive and encouraging.

To my family, especially my husband, Alvin, for acting as a sounding board and putting up with late nights, early mornings and Sundays in the office.

My heartfelt thanks goes to God, for the opportunity to work with such wonderful people, for the ability to take on this research project, and for sustaining me through this endeavour.

ABSTRACT

Research indicates that self-efficacy, a person‟s belief in their own ability to meet certain expectations, can impact on their success. This concept has implications for pre-service teachers who are required to bridge the gap between theory and practice on professional experience sessions. This study aimed to explore pre-service teachers‟ perceptions of factors that influence their instructional self-efficacy.

Data were collected from 71 students studying a Bachelor of Education (Primary) course using both qualitative and quantitative research instruments. Focus group (qualitative) transcripts were categorised and themes developed from these categories. Quantitative data was collected from a 50-item questionnaire, exploring their perceptions of their use of classroom planning, communication and management and its impact on their instructional self efficacy. Descriptive statistics for each question and sub-scale were determined and a linear regression was used to identify relationships between sets of independent variables (planning, communication, management), and two dependent variables teaching English and teaching Mathematics).

Pre-service teachers identified vicarious and enactive modelling, accompanied by reflection, feedback and a supportive social environment as strong contributors to instructional self-efficacy. In contrast to expectations, they also identified instructional tactics booklets as very useful for increasing instructional self-efficacy. Data from the questionnaire indicated that there is a positive correlation between pre-service teachers‟ perceptions of their ability to manage classes and their instructional self-efficacy in teaching English and Mathematics. It also indicated that different sets of instructional tactics were perceived by pre-service teachers to determine their instructional self-efficacy in teaching various content areas.

This study provided significant evidence that the use of specific instructional tactics and quality of pre-service classroom practice can be enhanced significantly by the manner in which the instructional tactics are taught, and may also provide relevant information for structuring practical teaching subjects in the future.

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OVERVIEW

The field of teacher education is broad, with preparation for the classroom encompassing knowledge, practice and commitment to professional roles as teachers. One aspect of this preparation involves the use of instructional tactics to communicate ideas and concepts to students. This study examines perceived sources of pre-service teachers‟ instructional self-efficacy enrolled in the Bachelor of Education (Primary) course in the sequential subjects PP271 and PP370, and the relationship between instructional self-efficacy of pre-service teachers and their perceived competency in using instructional tactics as outlined by the Graduate Professional Teaching Standards of the NSW Institute of Teachers.

This introductory chapter provides a rationale for the study, describes the background, establishes its purpose, and outlines the structure of the thesis.

Pre-service teachers study many areas of professional behaviour in their course. One of these areas relates to the ability to stand in front of a class and function effectively. Although teaching skills are at the core of effective practice, they may still be developing when an individual steps into the role of classroom practitioner. The belief that one will be able to adopt the teaching role is an important factor when moving from „student‟ to „teacher‟ mode.

One‟s belief in one‟s ability to perform a particular action can be defined as self-efficacy, and has broad application to many skill areas. Self-efficacy has been shown to influence performance in tasks, and may have a ripple effect in other areas (Bandura, 1977). As self-efficacy is largely determined by experiences and perceptions, success or failure at specific tasks raises or lowers self-efficacy (Schunk, 2004). Furthermore, Henson (2001) argues the case that it may be easier to influence

self-efficacy beliefs in the foundational years of pre-service education. This study examines the relationship between the instructional self-efficacy of pre-service teachers and their perceived competence with instructional tactics at the midway point of their course.

RATIONALE

The significance of this study lies in its practical application to the Bachelor of Education (Primary) course. Throughout the Professional Development and Experience subjects of the first four semesters of the course, pre-service teachers are introduced through a range of experiences to a variety of instructional tactics. These tactics are prescribed methods that teachers use to achieve learning outcomes in the classroom and for the purpose of this study the term *instructional tactics* will be limited to those specific tactics that pre-service teachers research, observe and practise in the pedagogy subjects in the first and second year of their course. An overview of these tactics is provided in Figure 1.1

Figure 1.1 Overview of instructional tactics as applied to this study (Avondale College Professional Experience Handbook, 2009)

Instructional Tactic	Description
Initiating Tactics	
Narrating	Telling stories and anecdotes, both fictional & factual.
Informing	Typically telling that something is so
Explaining	Typically telling why or how something works
Demonstrating	Showing how something is to be done
Discussing	Guided questioning with teacher input/direction
Object Lesson	Using concrete materials to develop an abstract idea
Eliciting Tactics	
Lower Order Questioning	Factual questioning based on memory
Higher Order Questioning	Questioning that requires the processing of information
Concept Attainment	Inductive questioning to draw out similarities from a series of examples Deductive questioning which uses generalisations to make specific inferences
Cooperative Group Learning	Facilitating groups of children to work together to achieve a common goal
Managing Tactics	
Directing	Telling the learners to do specific things
Monitoring learning	Gauging student responses to learning and responding accordingly

It is generally assumed that knowledge about instructional tactics, opportunities to observe them in a classroom environment, and occasion to practise them on peers in micro-teaching sessions (small group sessions of up to twelve people where pre-service teachers take turns teaching while their peers adopt the role of students), will equip the pre-service teachers to use these tactics in a classroom situation.

While many pre-service teachers are able to make the transfer from theory to practice in a competent manner, some struggle to use these instructional tactics effectively, and checklists (See Appendix 1) filled in throughout the Professional Experience sessions reveal that some students only attempt to use these instructional tactics if they are part of an assignment. This study on instructional self-efficacy was prompted by the gap between theory and practice.

In addition, the timeliness of this project lies in the call by the New South Wales Institute of Teachers for better equipped educational practitioners, and the establishment of Graduate Professional Teaching Standards as a benchmark for graduates aiming to become classroom teachers.

PURPOSE OF THE STUDY

The purpose of the study is to explore – within the Bachelor of Education (Primary) course - the impact that pre-service teachers‟ perceived ability to perform instructional tasks has on their instructional self-efficacy. It also seeks to measure self-efficacy in their ability to adopt other teaching roles which require both knowledge of, and skills in, instructional tactics for success. Furthermore, it attempts to establish if there are links between instructional self-efficacy and their perceived ability to perform instructional tactics in the NSW Institute of Teachers Teaching Standards and general scholarship. This information will then be used to identify areas of relative strength and weakness in the pedagogy component of Professional Development and Experience subjects with a view to improving this component of the course.

RESEARCH QUESTIONS

This research then will be guided by the following questions:

1. What elements of the Bachelor of Education (Primary) courses are perceived by pre-service teachers at the midway point of their course to increase instructional self-efficacy?
2. What are the pre-service teachers‟ perceptions of themselves, as students in the subject PP370, and particularly in regards to four of the seven elements of the NSW Institute of Teachers Graduate Professional Teaching Standards (Content, Planning, Communication and Management)?
3. What are the perceptions of pre-service teachers in terms of the relationships between their instructional self-efficacy in literacy and numeracy to academic achievement, planning, communication and classroom management?

FRAMEWORK

The research questions for this study were developed within the framework of the New South Wales Institute of Teachers‟ Professional Graduate Teaching Standards. As high quality education is the desired outcome of all education systems, the NSW Institute of Teachers was established to "support quality teaching in all NSW schools" (NSW Institute of Teachers. 2006. p. 1). After wide consultation with experts, and research involving more than 7 000 teachers, the Institute developed guidelines aimed at improving the quality of teaching.

The quality of education has long been an issue of discussion in both educational and political arenas. The Ramsey Report, (Ramsey, 2000) noted two areas of focus: the impact of good teachers on education and the provision of professional support systems to ensure quality teaching. Of these, the impact of teacher effectiveness on the quality of learning is the focus of this study. The report notes;

> "In terms of enhanced student learning, the research shows clearly that improving teaching is one of the most effective methods we have. It is arguably a more effective strategy than to reduce class sizes, institute system-wide testing or develop a new curriculum, unless these occur in parallel with improving teacher knowledge."
> (p.12)

The report also makes the salient point that it is impossible to detach pedagogy from the curriculum, and progresses further to cite the discrete treatment of disciplines and pedagogy in universities as an anomaly that needs to be addressed (Ramsey, 2000, p.13). Teacher education courses are placed strategically to impact on the quality of teachers they produce, despite having little control over factors in education such as class sizes, system wide testing or even curriculum development. Three further factors which this report states should be noted by providers of teacher education courses are:

- the perception of teachers that universities are distanced from schools in terms of understanding the demands of professional expectations (Ramsey, 2000, p.25);
- the view that Education is a discipline which may take precedence over the preparation of teachers to teach (Ramsey, 2000, p.26), and
- the apparent lack of strong links between schools and universities which allow pre-service teachers to have authentic and valid classroom experiences (Ramsey, 2000, p.60).

Based on this report and further research, the NSW Institute of Teachers was conceived, and a range of Professional Teaching Standards (PTS) developed. These PTS fall within a series of three domains incorporating seven elements which cover a broad spectrum of teacher behaviours (See Figure 1.2). Each element is divided into a number of aspects, and associated with each aspect are specific professional teaching standards at four levels, of which the first two are prescribed: Graduate Teacher, Professional Competence, Professional Accomplishment and Professional Leadership levels (NSW Institute of Teachers. 2008, p.1). The Graduate Professional Teaching Standards (GPTS) are of particular interest to providers of teacher education courses, as they outline the professional outcomes for a graduate teacher. Although the professional teaching standards provide a scaffold for mapping professional learning throughout the duration of a teacher‟s career, they also serve as a guide for the design and development of teacher education programs. The NSW Institute of Teachers accredits teacher education programs as part of an overall education quality assurance program.

The three Professional Teaching Standard domains are: Professional Knowledge, Professional Practice, and Professional Commitment. The domain of Professional Knowledge "encompasses knowledge and understanding of the fundamental ideas, principles and structure of the subject/disciplines taught by teachers" (NSW Institute of Teachers. 2008, p.3). While this domain focuses on content, Ramsey (2000) points out that it is detrimental to disassociate knowledge of subject content from effective pedagogy and therefore establishes a link between this domain and instructional tactics. Professional Knowledge also includes the mandatory components of teacher education, these being: information and communication technology (ICT) skills, effective strategies for indigenous education, special needs including English as a second language, meeting challenging behaviour and literacy and numeracy education (NSW Institute of Teachers. 2008).

The domain of Professional Practice deals with planning, assessment and reporting, communication skills (questioning, leading discussions, using student group structures), the use of resources and classroom management skills

The third domain relates to Professional Commitment. This domain relates predominantly to the ability of teachers to contribute to the wider community, network for professional growth and adopt ethical behaviour. It does, however, include the ability of teachers to reflect on their own practice, which is an important component of professional growth. These domains are further divided into seven elements. (See Figure 1.2)

Figure 1.2 Framework of Professional Teaching Standards

Domain 1: Professional Knowledge

Element 1: Teachers know their subject content and how to teach that content to their students
Element 2: Teachers know their students and how they learn

Domain 2: Professional Practice

Element 3: Teachers, plan, assess and report for effective learning
Element 4: Teachers communicate effectively with their students
Element 5: Teachers create and maintain safe and challenging learning environments through the use of classroom management skills.

Domain 3: Professional Commitment

Element 6: Teachers continually improve their professional knowledge and practice
Element 7: Teachers are actively engaged members of their profession.
(NSW Institute of Teachers, 2008)

Dinham (2007, p.2) maintains these elements "articulate what accomplished teachers know, do and value, and can motivate, guide and recognise teacher professional learning." For the purpose of this paper, selected aspects of Elements One, Three, Four and Five are examined. It is perceived that the instructional tactics outlined in Figure 1.1 are directly related to these aspects while those aspects not selected have only tenuous links to the instructional tactics. Each of these aspects will be explored briefly to establish the validation of their inclusion in this study.

Element 1 (See Figure 1.3) relates to knowledge of content and also how to teach specific content. Although commonly recognised that different Key Learning Areas (KLAs) require some differentiation in forms of instruction, some basic instructional tactics apply to all KLAs. These include tactics such as narrating, explaining, demonstrating, questioning and leading a discussion effectively; while others such as cooperative learning and concept attainment strategies also have broad application. As "Pedagogy cannot be separated from the curriculum" (Ramsey, 2000, p.13), it can be argued that instructional tactics should be endemic in all curriculum subjects.

Figure 1.3 Context of Element One, Graduate Professional Teaching Standards

Domain	Professional Knowledge
Element 1	Teachers know their subject content and how to teach that content to their students.
Aspect	Knowledge of pedagogy
GPTS	1.1.2 Demonstrate research-based knowledge of the pedagogies of the content/disciplines taught.

Element 3 (See Figure 1.4) is included because the ability for teachers to plan effectively for learning relies on their knowledge of and proficiency in using a variety of instructional tactics. Marzano, Pickering and Pollock (2001, p.146) maintain when teachers are familiar with instructional tactics, "this knowledge will likely influence the way they plan for instruction" while McEwan (2002, p.92) comments that "Highly

effective teachers do not merely facilitate learning. They must also design, direct and orchestrate it."

Figure 1.4 Context of Element Three, Graduate professional Teaching Standards

Domain	Professional Practice
Element 3	Teachers plan, assess and report for effective learning
Aspect	Teaching and learning programs
GPTS	3.1.2 Plan and implement coherent lessons and lesson sequences that are designed to engage students and address learning outcomes.

Element 4 (See Figure 1.5) relates to communication skills. Questioning, informing, explaining, demonstrating and leading discussions are all instructional tactics which support the development of effective communication skills. Of these, effective questioning and the ability to lead discussions are targeted by the NSW Institute of Teachers. The GPTS 4.1.2 expects graduate teachers to "Demonstrate a range of questioning techniques designed to support student learning" (NSW Institute of Teachers, 2006. p.9).

While this sounds straightforward, Morgan and Saxton (2006) point out that sound questioning skills underpin all effective teaching, and the ability to recognise good questions precedes the ability to ask them, suggesting that the process is not necessarily simple, although it is crucial to the development of effective teaching.

In addition, it is widely recognised that questions are closely related to thinking skills and the degree to which higher order thinking skills are required correlates with the nature of the questions. Constructing questions to target higher order thinking skills such as analysis, synthesis and evaluation requires practice and skill and is included in teacher education textbooks (see Barry & King, 1998). Morgan and Saxton (2006) suggest that modelling is an effective way to teach questioning skills, and this can be done either covertly or overtly. Covert modelling relies on students paying attention to the way the teacher asks questions, while overt modelling requires the teacher to think aloud when formulating questions, praise well-structured questions, encourage questioners, reflect on, and analyse questions (Morgan & Saxton 2006). Both overt and covert modelling are useful, and contribute to the development of sound questioning skills. In addition to recognising effective questions and knowing how to

structure them, it is important to be aware why teachers ask questions (Brown & Wragg, 1993). Some reasons for asking questions include arousing interest, focussing attention, checking for understanding, developing reflection and expressing a genuine interest in the ideas and feelings of students. The scope of questioning is so broad and its implications for teaching so central to sound pedagogy that it ranks highly as an instructional tactic.

Linked closely to questioning is discussion. The GPTS 4.1.3 expects that teachers will "Listen to students and engage them in classroom discussion." (NSW Institute of Teachers, 2006. p.8). Effective questioning provides opportunities for students to learn through discussion. Pre-service teachers often view discussion as an easy instructional tactic yet Morgan and Saxton (2006) point out that the teacher"s role in a discussion is not merely to ask questions, but to facilitate the exchange of ideas, and encourage wide participation in both asking and answering questions. This requires a high level of communication.

Figure 1.5 Context of Element Four, Graduate Professional Teaching Standards (4.1.2, 4.1.3)

Domain	Professional Practice
Element 4	Teachers communicate effectively with their students
Aspect	Effective communication and classroom discussion
GPTS	4.1.2 Demonstrate a range of questioning techniques designed to support student learning 4.1.3 Listen to students and engage them in classroom discussion

Still in Element 4 (See Figure 1.6), the use of student group structures is included as a method of effective teacher communication with students. This links closely with the instructional tactic of Cooperative Group learning (See Figure 1.1). The management of group structures differs from the management of individual learning as it requires the students to apply social skills, (e.g. listening, taking turns, encouraging), in addition to learning behaviours. Joliffe (2007) points out that teamwork is a necessary life skill and therefore teachers are well placed to help their students develop this skill if they have mastered the management of a variety of group learning structures. A compilation of research by recognised leaders in the field of cooperative learning indicates at least six defining components of effective group work.

1.) Positive interdependence, (Hill & Hill, 1990; Johnson, Johnson & Holubec, 1990; Kagan, 2007) meaning the success of the task is dependent on the success of each individual.
2.) Face-to-face positive interaction (Johnson, Johnson & Holubec, 1990; Kagan, 1992).
3.) Individual accountability (Kagan, 1992) in group tasks.
4.) Interpersonal and small group skills (Johnson, Johnson & Holubec, 1990) such as listening, accepting ideas, encouraging, and taking turns.
5.) Group processing (Johnson, Johnson & Holubec, 1990)
6.) Goal similarity (Hill & Hill, 1990).

It requires a high degree of skill to be able to implement group learning structures that satisfy the listed components. It also necessitates a thorough understanding of the instructional tactic, plus skill to manage the social environment. One of the claims for collaborative learning, as pointed out by Hill and Hill (1990, p.3) "is that the exposure to different ideas and articulation of problems and solutions leads to deeper understanding". This, by itself, is sound reason for inclusion of cooperative learning as an instructional tactic.

Figure 1.6 Context of Element Four, Graduate Professional Teaching Standards

Domain	Professional Practice
Element 4	Teachers communicate effectively with their students
Aspect	Student grouping
GPTS	4.1.4 Use student group structures as appropriate to address teaching and learning goals

The final aspect of Element 4 (See Figure 1.7) focuses on teaching strategies, with a focus on information and communication technology. It requires teachers to "use a range of teaching strategies and resources" (NSW Institute of Teachers, 2006. p.8). As the instructional tactics used for this study may also fall into the category of teaching strategies, it is clear that each of the instructional tactics contribute to this GPTS. It is appropriate, however, that special mention be given to the use of ICT and other technologies. In a century where technology is a fast-changing landscape, it is imperative that teachers keep pace. Yet Lloyd (2007, p.30) points out that "educational technology that is state-of-the-art today can quickly verge on the

obsolete". This mandates the necessity for teachers to stay current in the area of technology. Not all educationalists; however, subscribe to this view. Cuban (cited in Lloyd, 2007) suggests that studies into this field have yet to isolate significant gains in teaching effectiveness which can be attributed solely to technology rather than the teacher"s methods or other contributing factors such as class size or classroom ethos. He does, however, concede that this may be due to how teachers implement technology in their teaching: as a quick supplement to existing instructional tactics rather than a facilitating role. At the other extreme, Wagner, Cohen and Docksai (2008) view technology in the classroom as superseding writing; which they argue is merely a technology that is falling behind in serving our needs. Whichever view one subscribes to, this teaching standard highlights the permanence of technology and the obligation to keep education relevant to society by using it to enhance learning. Perhaps the strongest argument to come out of this discussion is the importance of using a wide range of instructional tactics, in conjunction with ICT, to engage and motivate students rather than relying on just two or three. The field of ICT is one of the mandatory areas of study for pre-service teachers. (NSW Institute of Teachers, 2006).

Figure 1.7 Context of Element Four, Graduate Professional Teaching Standards

Domain	Professional Practice
Element 4	Teachers communicate effectively with their students
Aspect	Teaching strategies
GPTS	4.1.5 Uses a range of teaching strategies and resources including ICT and other technologies to foster interest and support learning.

Element 5 deals with classroom management skills (See Figure 1.8). In literature, the term classroom management may refer to the whole spectrum of activities that teachers undertake in a classroom, or it may be more narrowly defined as managing students" behaviour. As the two are linked, it is generally accepted that classroom management is broader than simply managing behaviour, although it remains an important constituent. For the purpose of this research, the term „management" will refer to strategies pre-service teachers use to maintain a focus on learning, with behaviour management forming a large component of this.

In the main, most approaches to management include both pro-active strategies such as creating an environment of respect, building rapport, and establishing an ethos of learning, and re-active strategies such as applying consequences for inappropriate behaviour. The NSW Institute of teachers focuses on pro-active strategies in its GPTS. Several discipline models taught in teacher education courses favour pro-active strategies when dealing with behaviour management (See Edwards & Watts, 2008; Lewis, 2008; Konza, Grainger and Bradshaw, 2001) and Jensen (2003) goes one step further to insist that emotional states can be managed by effective teaching, thereby engaging students and curtailing the need for re-active or corrective strategies. This is countered by Henson (2001) who maintains that effective classroom management is crucial for effective instruction and furthermore, a teacher‟s belief in his or her ability to positively facilitate student learning may impact on management behaviour. The implication here is that the choice of instructional tactics used in a classroom at any given time, will impact on the type and frequency of behaviour management that will be required.

It should be noted here that classroom management is a major issue in schools. Lewis (2008, p.13) states that "classroom management is a well-documented source of teacher stress." It is also a source of concern for employees as these comments from the principal of school that regularly places pre-service teachers indicate.

> My greatest concern for new teachers apart from grasping the differentiation of curriculum is behaviour management. Today, more and more children are presenting with difficult behaviours that impact greatly on the classroom tone and the teacher's ability to teach. When all is said and done, a teacher that can not control a class will not be offered a job despite their proficiency in other areas - it is one of fundamentals that you must have.
> (School principal, 2009)

Figure 1.8 Context of Element Five, Graduate Professional Teaching Standards

Domain	Professional Practice
Element 5	Teachers create and maintain safe and challenging learning environments through the use of classroom management skills.
Aspect	Manage classroom activities smoothly and efficiently
GPTS	5.1.4 Provide clear directions for classroom activities and engage students in purposeful learning activities.

The Graduate Professional Teaching Standards offer providers of teacher education ample opportunities to target specific instructional tactics as they relate to general teaching, specific content areas, planning, communication and classroom management. Considering the concern for maintaining and improving the standard of education, it is clear that instructional tactics play a central role in preparing pre-service teachers for the classroom.

STRUCTURE OF THE THESIS

This thesis comprises six chapters. Chapter One introduces the study in terms of its purpose, rationale, and aims. It also provides a context and framework for the study, and introduces the questions that the study attempts to answer.

Chapter Two reviews the literature relating to self-efficacy, then develops a theoretical basis for the study by examining instructional self-efficacy as it relates to an educational setting.

Chapter Three outlines the research methodologies chosen, and discusses their validity for this study. This chapter includes a description of the population, the development of focus questions, the development of a questionnaire and collection and analysis of data.

Chapter Four discusses the results from the focus groups and the questionnaires in detail, while Chapter Five deals with findings and discusses the implications of the results, comparing results from the focus groups and questionnaire and placing them in the context of the literature review.

The final chapter builds on the discussion of the previous chapter. It identifies limitations of the study and explores possibilities for further study. The chapter concludes by summarising the implications of the findings and their wider relevance to the Bachelor of Education (Primary) degree program.

CHAPTER TWO

LITERATURE REVIEW

INTRODUCTION

The field of teacher education is broad and encompassing. Pre-service teachers are expected to develop sound content knowledge, instructional tactics which includes classroom management skills, communication skills, planning competence and positive professional attitudes during their course of study. This study relates to the perceptions of pre-service teachers‟ confidence in their ability to initiate, elicit and manage classroom learning. For the purpose of this research, these skills will be collectively called instructional tactics and are based on the specific tactics that pre-service teachers research, observe and practice in pedagogy units in the first and second year of their course (See Figure 1.1).

Stanwick and Paynter (1993) have observed that pre-service teachers enter courses with a plethora of beliefs about themselves as teachers and about what constitutes sound pedagogical practice. These beliefs may or may not be compatible with what is considered best practice and may stem from their reminiscences of themselves as students (Hattie, 2009). A further complication to the teacher education process is highlighted by Jeanneret and Cantwell (2002) who discovered that, one cannot assume that exposure to a particular instructional tactic will facilitate a willingness to use that tactic in the classroom.

Recent research into teaching and learning in Australia (McLeod & Reynolds, 2007; Sawyer, 2006) and abroad (Beyer, 2008; Hattie, 2009; McIntyre, Kyle & Moore, 2006; Schunk, 2004) has identified characteristics that are common to exceptional teachers. The NSW Institute of teachers (2006) has developed a set of professional teaching standards (See Figure 1.2) which pertain to all areas of teaching and which set the standard for teacher performance. This puts teacher education programs under pressure to ensure that these standards are met by pre-service teachers before they embark on their teaching career.

One claim for improving teacher effectiveness comes from the area of research into self-efficacy. This chapter surveys the literature relating to self-efficacy, referring predominantly to the research of Albert Bandura (1977, 1986, 1997) and Mihaly Csikszentmihalyi (1997), and identifies five key factors which contribute to self-efficacy. It also reviews recent educational literature that puts instructional self-efficacy into the context of teacher education courses.

SELF-EFFICACY

Albert Bandura"s study of self-efficacy culminated in the publication of "Self-efficacy: Toward a Unifying Theory of Behavioural Change." Growing out of social cognitive theory, Bandura"s findings challenged behavioural theory, and his self-efficacy theory was established as an instrument for analysing changes in present behaviour and predicting changes in future behaviour (Bandura, 1977).

Self-efficacy has many applications, one of which is educational. Bandura (1986, p.301) defines self-efficacy as "People"s judgements of their capabilities to organise and execute courses of action required to attain designated types of performances". Brownell and Pajares (1999, p.154) place self-efficacy into an educational setting, purporting that "Teachers" efficacy beliefs are contextual judgments of their capability to succeed in particular instructional endeavours". Therefore, if self-efficacy is an individual"s belief in one"s ability to perform a particular action in order to achieve a desired outcome, it should be an important consideration in teacher education programs. In fact, Schunk (2004) maintains that instructional self-efficacy is imperative as it not only relates to the capacity to teach but also relates to an individual"s beliefs about his/her ability to help students learn. This, in turn, impacts on the quality of teaching that is planned.

Individuals with high self-efficacy are more persistent in their learning and invest more effort in given tasks. They are more likely to seek out alternative strategies if thwarted than people with low self-efficacy (Bandura, 1986). By contrast, individuals with low self-efficacy give up easier, and may even act in ways that inhibit learning, leading to a downwards spiral of performance and self-efficacy (Bandura, 1986).

Individuals derive their self-efficacy largely from past experiences. The more positive and successful the experiences, the higher the self-efficacy and the better the performance (Bandura, 1986). However, it is important to note that success attributed to variable factors such as luck, an easy topic or a good partner for a presentation fails to lift self-efficacy levels and failure due to controllable factors such as lack of preparation will not raise self-efficacy levels either. Another consideration is that the self-efficacy of a teacher is not necessarily consistent across the range of activities that make up a teacher"s work (Bandura, 1997). This leads to the conclusion that self-efficacy is only raised through success attributed to controllable factors (Bandura, 1986).

Several studies in a variety of educational settings support the link between instructional self-efficacy and perceived performance in teacher education programs. Woolfolk and Hoy (1990) discovered that pre-service teachers with high self-efficacy were more likely to provide a quality learning environment and cater for individual differences; going so far as to assert that a teacher"s self-efficacy is one factor that reliably predicts teacher and student performance Another study (Tschannen-Moran & Hoy, 2001), focusing on how teachers" self-efficacy beliefs are measured, points out that a teacher"s sense of self-efficacy links directly to various educational outcomes, including achievement and motivation of students. Furthermore, this research linked strong self-efficacy with organisational skills, openness to change, enthusiasm and positive relationships with students. From these findings, we can infer that teacher education courses will benefit from the development of methods for increasing pre-service teachers" instructional efficacy (Schunk, 2004). A study involving pre-service music teachers discovered that focusing on self-efficacy enhancement in task activity, and engaging pre-service teachers in teaching activities, increased their self-efficacy and therefore performance in relationship to teaching composition (Jeanneret & Cantwell, 2007), while Hutchinson, Follman, Sumpter and Bodner (2006) point to self-efficacy as a determining factor in retention rates of engineering students, indicating that it impacts, not only on an individual"s perception about themselves as a professional, but also as a student.

Another perspective on self-efficacy is provided by Mihaly Csikszentmihalyi, best known for his research in the area of positive psychology and particularly the notion

of *flow*. Csikszentmihalyi (1997) has identified a „state" in which people are engaged with everyday life to the extent that they achieve optimal *flow*; a natural high, where positive emotions and a sense of achievement mesh together to create an „ah ha" moment. While not a precursor to self-efficacy, there is strong evidence to suggest that the experience of optimal flow will positively impact on self-efficacy:

> In our studies we found that every flow activity, whether it involved competition, chance or any other dimension of experience, had this in common: It provided a sense of discovery, a creative feeling of transporting the person into a new reality. It pushed the person to higher levels of performance, and led to previously undreamed-of states of consciousness. In short, it transformed the self by making it more complex. In this growth of the self lies the key to flow activities (Csikszentmihalyi, 1990, p.74.)

Although Csikszentmihalyi"s work centres on occupations where professional freedom is high, a number of principles identified have application to education, and particularly methods for teaching instructional tactics to pre-service teachers. These include becoming immersed in the activity, exercising focused attention on the activity, setting clear goals and learning to enjoy experiences within an encouraging social context (Marr, 2008). Csikszentmihalyi (1990) also acknowledges the role of personality in achieving optimal *flow*, a factor which has relevance to the field of education.

Resulting from the work of Bandura and Csikszentmihalyi, a number of factors emerge as clear contributors to self-efficacy. These factors are vicarious and enactive experiences, social persuasion, physiological states, goal setting and personality. Each of these topics will be elaborated further with vicarious and mastery experiences being dealt with together in a discussion of modelling as a means to increase self-efficacy.

FACTORS THAT INCREASE SELF-EFFICACY

Modelling

Initially limited to the learning of social behaviour and motor skills, modelling is now a critical component in social cognitive theory. Modelling is a general term that can be defined as "behavioural, cognitive, and affective changes deriving from observing

one or more models" (Schunk, 2004, p.88). It is important to note that modelling may be vicarious or enactive, and this section of the literature review deals with both. Vicarious modelling relates to observing the actions of others while enactive modelling takes the process one step further, and involves the observer in acting out the modelled behaviour with the intent of achieving mastery.

Vicarious modelling may be unintentional, but when used intentionally, learning, and subsequently self-efficacy can be enhanced. For this reason it is a relevant topic in the area of teacher education at the institution in which this study was conducted, where modelling plays a significant role in the development of specific instructional tactics (See Figure 1.1), and other teacher-related behaviours. Schunk (2004) acknowledges that both cognitive modelling and didactic instruction play a role in raising self-efficacy.

Vicarious modelling has two components: a model and an observer, both of whom play an important role in the process. Researchers (Bandura, 1977; Horner, Bhattacharyya, & O"Connor, 2008; Schunk, 2004) have identified three dominant characteristics of effective models. These are perceived similarity, perceived competence and perceived status. Perceived similarity may be related to similarities in age, gender, social situation, ethnicity and interests (Horner et al. 2008). Of these, perceived similarity of interest is the overriding factor and has been found to outweigh all other perceived similarities (Horner et al. 2008). Perceived competence is a second contributing factor. If the model is competent, and is performing an action that observers perceive they will also have to perform, the effectiveness of the modelling process increases (Schunk, 2004). The third factor is perceived status, also called the "stand out factor" or salience, (Sternberg & Williams. 2002, p.255) and relates to the authority the modeller has in any given situation. Horner et al. (2008, p.221) maintain that "all three of these elements must be present in some combination for the observer to choose to emulate a potential model"s behaviour or thinking patterns". When an individual observes skills modelled by an appropriate significant person, their own belief in their ability to master that skill is heightened.

In addition to raising self-efficacy through exposure to adult models, it has also been noted that peer modelling, if done by competent classmates, results in higher efficacy

and cognitive competencies than when those same activities are modelled by the teacher (Schunk 2004). However, poor peer modelling could have a negative effect because transferral of skills is not necessarily discerning. Horner et al. (2008) propose a solution to this issue: observers are more likely to emulate modelled behaviour if there are perceived rewards. This may be done by affirming appropriate peer-modelled behaviour. Furthermore, specific and immediate feedback assists the students to identify and correct deficiencies, and affirm strengths (Schunk, 2004), building self-efficacy even further. Glaser (2001) takes the process one step further to state that behaviour accompanied by an explanation is even more effective, and Schunk (2004, p.116) sums up the value of peer modelling by pointing out that "compared with a single model, multiple models increase the probability that observers will perceive themselves as similar to at least one of the models". As the primary source of self-efficacy lies in past experiences, the importance of providing pre-service teachers with successful experiences is established.

In addition to identifying characteristics of effective models, certain conditions apply to the „observer" (Bandura, 1977; Horner et al., 2008; Schunk, 2004). These conditions are paying attention, ability for retention, potential for replication, (production), and motivation to exhibit the same behaviour.

If observers do not pay attention, the behaviour will not transfer no matter how effective the modelling. Csikszentmihalyi (1990) maintains, that in order to achieve *flow*, attention must be focused on the task, a point which is consistent with Bandura"s findings. Horner et al. (2008) have adapted Bandura"s work and identified the importance of focused attention in learning a new skill through modelling. They raise the issue of paying attention to the event being modelled then take the concept further than Csikszentmihalyi by adding the salient point that unless the observer can retain the information correctly in the long-term memory, behaviour transfer will be limited (Horner et. al., 2008). Kandel (2006) supports this finding and makes a differentiation between ambient, involuntary and voluntary attention, citing the conscious act of paying attention as most effective in embedding information in long-term memory. Although Bandura and Csikszentmihalyi present slightly differing aspects of focused

attention, both views are united on the importance of focused attention for building knowledge, and ultimately skills, which are precursors to self-efficacy.

The third condition of the observer is the potential for replication, that is, the ability to repeat the behaviour (Horner et al., 2008). If a skill is beyond the cognitive or physical ability of the observer, no amount of focused attention or expert modelling will facilitate a transfer of skills. Certain conditions exist which indicate the inability of some individuals to both read and imitate some social language effectively. Recent research (Dobbs, 2006; Nash, 2007; Ramachandran & Oberman, 2006) indicates that individuals with autism may not have the potential for replication due to the inability of their mirror neurones to fire the necessary messages to their brain. Within a tertiary education program; however, it is presumed that the majority of pre-service teachers, by their third year of training, will be capable of replicating modelled strategies, thus meeting this criteria.

The final condition outlined by Horner et. al (2008) is motivation. Motivation is enhanced when the observer is aware that he/she will be required to perform the same skills or behaviour that have been modelled (Schunk, 2004). It is assumed that third year pre-service teachers will be motivated to learn how to implement effective instructional tactics, as it relates directly to the practical components of their course, but it also points to the responsibility of lecturers to act as key motivators.

While the literature indicates that vicarious experiences influence self-efficacy, a study by Poulou (2007) which explored pre-service teachers‟ perceptions of the source of personal teaching efficacy, discovered that pre-service teachers did not rank vicarious experiences high for increasing teaching efficacy. Of greater significance were mastery experiences or enactive modelling.

Enactive modelling involves the learners participating in the modelled behaviour themselves and has a positive impact on motivation. This improves performance and self-efficacy, as distinct from learning (Schunk 2004). Furthermore, if opportunities for enactive learning occur after vicarious modelling and opportunities are given for questioning, explanation and discussion, the probability of success increases, leading to mastery experiences, which then further increase self-efficacy. Schunk (2004,

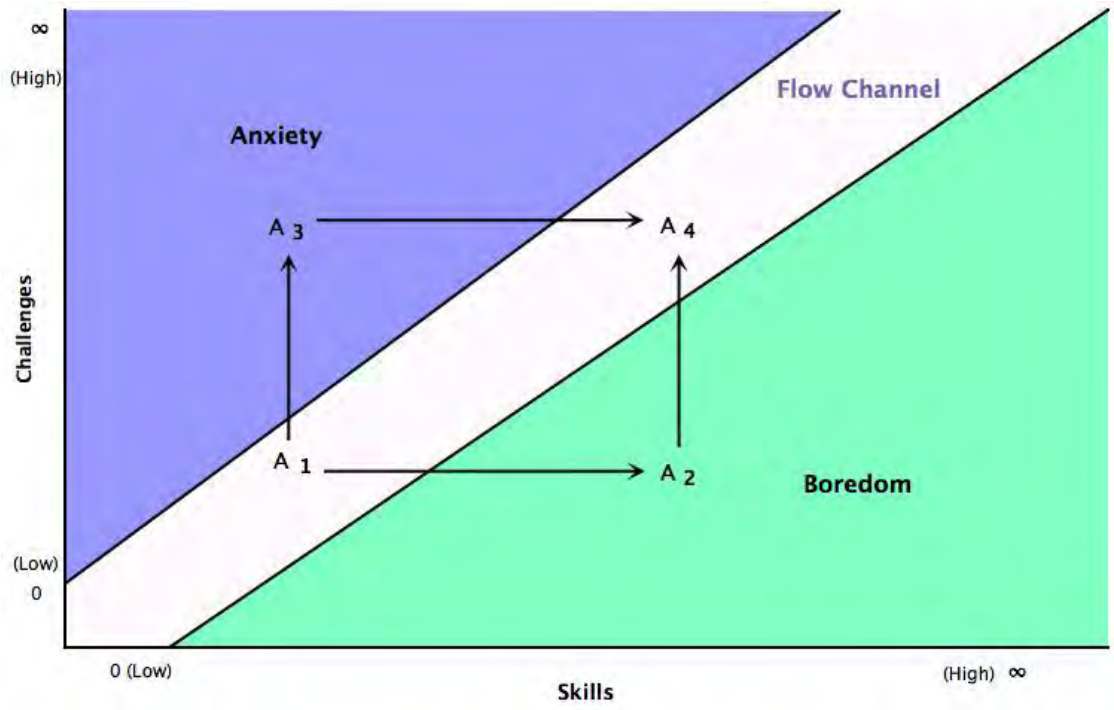
p.103) makes the salient point that "the highest degree of model-observer similarity occurs when one is one's own model". Koedinger and Corbett (2006, p.62) elaborate on enactive modelling,

> Learning by doing is the idea of putting students in performance situations whereby the objective concepts and skills can be applied and instruction can be provided in the context of or in response to student needs.

This opportunity for enactive learning, when conducted in a supportive and positive social setting, raises self-efficacy, providing the experience is a positive one.

Csikszentmihalyi (1990) adds a further element to the concept of enactive modelling by exploring the circumstances under which optimal learning and success will occur, therefore leading to *flow* and heightened self-efficacy. Flow theory identifies the need to provide enactive experiences that are free from both boredom and anxiety, as these states are not conducive to learning (Csikszentmihalyi, 1990). Figure 2.1 represents the relationship between challenge and skills (axes of the diagram) and anxiety and boredom.

F**igure 2.1** Relationship of challenge and skill to achieving *flow* in a given activity. (Adapted from Csikszentmihalyi, 1990, p.74)



If we apply this diagram to learning a specific instructional skill such as narrating, it will appear like this. When a pre-service teacher first tries narrating a story to one child (A_1) she is low in skill, and the challenge is to complete the tactic in a rudimentary fashion. This is likely to be an enjoyable experience if successful, but as narrating skills improve, boredom may set in (A_2), so a new challenge is required. This could be narrating a story to peers which may then induce some anxiety (A_3). As neither boredom nor anxiety is a positive experience, the motivation exists to move back into the flow channel. The only way to achieve this is either by increasing the challenge, or increasing the skill levels. Both these opportunities exist when the pre-service teacher engages in using the tactic of narrating during professional experience placement in a school. This puts her back into the flow channel (A_4) (Csikszentmihalyi, 1990).

The diagram explains why flow is important – it leads to growth and discovery and pushes individuals to stretch their skills. This idea is supported by Jensen (2003) who

claims that high challenge, low threat environments create the best learning climates. The implication of Csikszentmihalyi"s *flow* theory for teacher education programs is clear. Learning should be structured in such a way to achieve *flow,* and opportunities to practise instructional tactics must be challenging enough to demand engagement, yet not be threatening. They should also achieve a balance between skill difficulty and boredom. This combination should achieve the best results in terms of skill learning and efficacy.

Research supports claims that both vicarious and enactive modelling can enhance self-efficacy. In a study relating to teachers" preparedness to use technology in teaching, Albion (1999, p.2) supports the notion that "real experience is more effective than vicarious experience for increasing self-efficacy beliefs" in pre-service teachers. Lee and Ertmer (2006, p.66), however, point out that while vicarious experiences do not raise self-efficacy to the same extent as personal mastery experiences, they may offer a "more feasible method for enhancing pre-service teachers" self-efficacy " when available resources and logistics are considered. Hattie (2009) has given close attention to modelling in teacher education courses through microteaching, which involves pre-service teachers conducting mini lessons which are then analysed in post-lesson debriefing and reflection. He concludes that of the various teaching methods within teacher education programs, micro-teaching ranks as the most effective but concludes that "all components should be included: theory, demonstration and practice, as well as feedback and coaching, preferably in a distributed rather than condensed manner across many sessions" (Hattie, 2009, p.112).

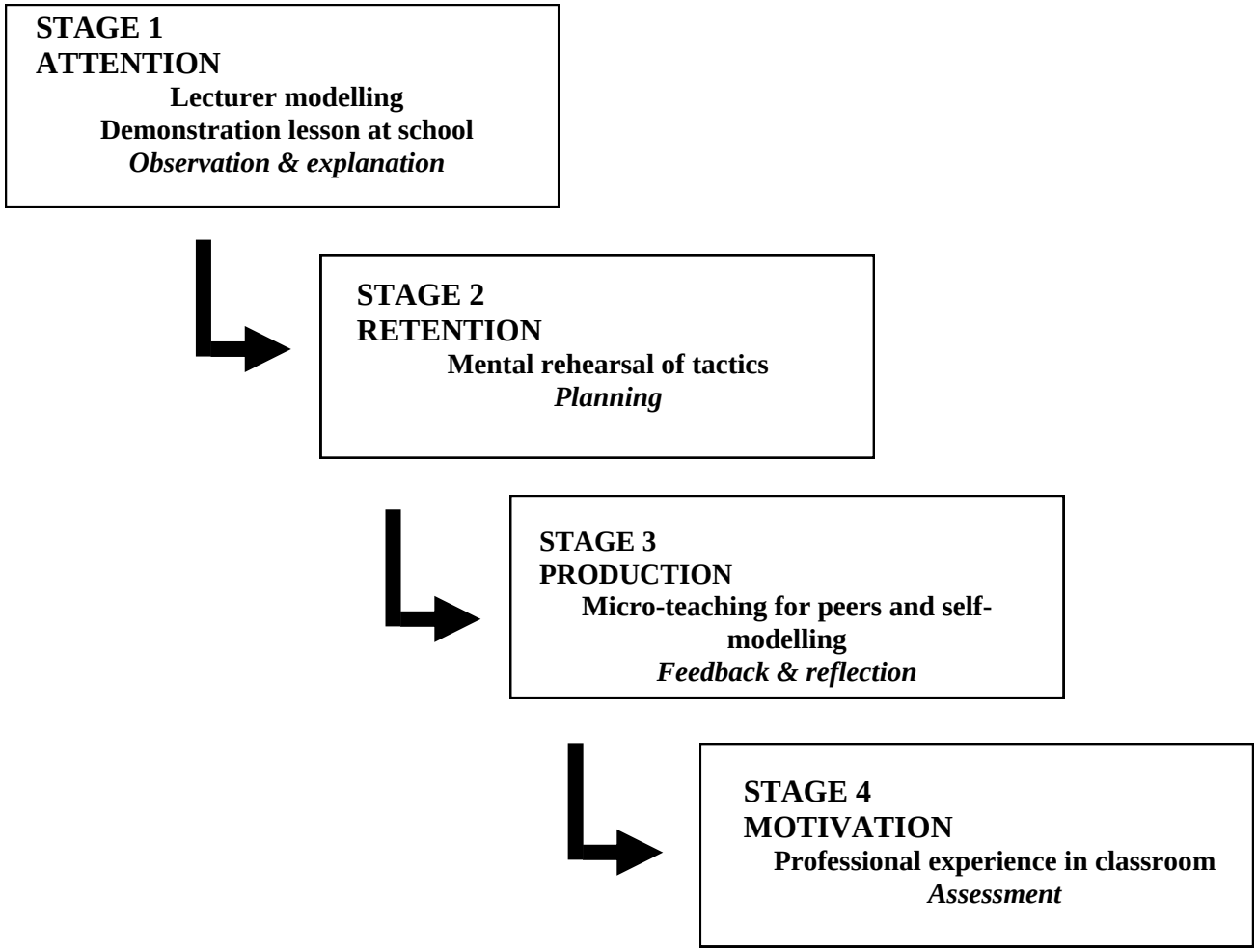
Because of the effect that modelling can have on building self-efficacy, the implications for teacher education rising out of modelling research are as follows. Firstly, educators must be aware that modelling is an ongoing process and "for abstraction to occur, students need multiple demonstrations of a conceptual rule across a variety of tasks and settings" (Zimmerman & Schunk. 2003, p. 444). This would suggest that pre-service teachers be exposed to a variety of both vicarious and enactive modelling experiences throughout the duration of their course. Secondly, programs should be constructed with high levels of learning engagement. As pre-service teachers master skills necessary for classroom proficiency, they should be continually challenged within a supportive, non-threatening environment. Thirdly,

modelling should be accompanied by substantive communication where pre-service teachers have opportunity to question, clarify and discuss whatever tactic is being modelled. This will confirm their understanding and build a strong platform for confident pedagogy.

One final implication relates to distance education courses. With many universities offering online learning, Allen (2003, p.1) has raised a significant point. "It is critical that an exemplary pedagogical approach is demonstrated in providing on-line professional development resources". While it may be relatively easy to incorporate vicarious and enactive learning in face-to-face delivery of instructional strategies, the construction of an online or distance learning package that delivers the same results may present a greater challenge, and should be a consideration in the development of on-line learning resources.

The following sequence (See Figure 2.2) summarises the work of Bandura as it relates to modelling and places it in the context of building instructional self-efficacy. Based on the sub processes of *attention, retention, production and motivation*, (Bandura, 1977) the sequence takes advantage of the natural learning process and is designed for pre-service teachers to experience success in using instructional tactics. This sequence could be repeated each semester as new instructional strategies and behaviour managements skills become the focus of the professional development units.

Figure 2.2 Optimal learning sequence of modelling for instructional self-efficacy (Beverly Christian 2008).



Social encouragement

Research indicates that self-efficacy beliefs can also be raised through the use of social encouragement. If peers or authority figures demonstrate belief in an individual‟s ability to perform, the individual‟s self-efficacy will rise. This is especially true of verbal persuasion which, by itself is a strong motivator (Schunk, 2004). In several studies over a period of four years, Schunk (2004) identified that feedback which attributes success to effort and/or ability, improves self-efficacy and performance, as does the combination of feedback linked to goals. In addition,

opportunities for self-generated feedback (reflection) allow students to self-regulate their learning. Lackey (1997) researched the impact of written feedback on self-efficacy and performance. He discovered that written feedback has a positive effect, but only when it is succinct, specific and occurs frequently.

Csikszentmihalyi (1997) takes a more holistic approach to social encouragement. He believes that social situations can contribute to positive experiences and that people feel most comfortable and positive when working with friends. "Being with friends provides the most positive experiences. Here people report being happy, alert, sociable, cheerful, motivated" (Csikszentmihalyi, 1997, p.42). This indicates the importance of learning instructional tactics in a safe social environment, with already established friendship networks. Furthermore, Csikszentmihalyi (1997) cites excessive self-consciousness as an obstacle to experiencing flow. When an individual feels safe in an accepting social group, there is the expectation that feedback will be honest and affirming and less concern about the perceptions of others. This adds to the enjoyment of the learning process.

Csikszentmihalyi (1990, p.154) believes in the power of social encouragement as part of his total optimal *flow* theory to the extent he maintains that "In theory, any job could be changed so as to make it more enjoyable by following the prescriptions of the flow model". Although Bandura does not build a case specifically for enjoyment in building self-efficacy like Csikszentmihalyi, he does acknowledge the role of social persuasion and physiological states, both of which have the capacity to impact on enjoyment levels. Bandura (1977, p.82) does; however, caution that this form of induced self-efficacy is likely to dissipate quickly if failure at particular tasks follows and states that "It is more difficult to instil high beliefs of personal efficacy by social persuasion alone than to undermine it".

Physiological State

Closely linked to social encouragement is the impact of physiological states on self-efficacy. Physiological states may present as increased heart rate, blushing, sweating

or clammy palms and difficulty speaking. These states are usually the result of fear or anxiety, which may be allayed to a certain extent by social encouragement. If a task engenders apprehension or extreme nervousness in an individual, their ability to deal with the task is affected and the perceived magnitude of the task increases. This has the effect of lowering self-efficacy (Bandura, 1977). Conversely, the opposite holds true: high levels of enjoyment and interest in a task will raise self-efficacy. This highlights the importance of providing ample successfully modelled tasks, allowing for substantive communication about the task, and providing a supportive social environment in order to minimise debilitating physiological states and enhance positive ones that will increase self-efficacy.

When performing an action publicly, high levels of self-consciousness may be a roadblock to success and cloud an individual‟s self-efficacy (Csikszentmihalyi, 1997). Self-consciousness, apprehension and anxiety may be temporary emotions, brought on by a particular set of circumstances that intersects with the timing of the task to be completed. For example, a pre-service teacher with a heavy cold may feel self-conscious about her red nose and constant need for tissues and this may cause anxiety in relation to a speaking task. However, when the temporary condition is relieved, confidence returns. More devastating to self-efficacy are the chronic conditions such as extreme blushing or hot flushes, stress-induced stuttering or clammy hands experienced by some pre-service teachers. While a little stress is positive in that it may be stimulating, it is important to remember to balance challenge and threat (Jensen, 2003) and to minimise threat as a means of reducing debilitating physiological states.

As the extent to which self-efficacy displays itself may be determined partly by the satisfaction levels the task engenders and whether it is energising or debilitating, it is important to pay attention to this factor when constructing teacher education programs.

Goal Setting

Another important aspect related to self-efficacy is goal setting. While Bandura has less to say on the relationship between self-efficacy and goal-setting than other factors, there is sufficient evidence to indicate that identifying and aspiring to appropriate goals raises self-efficacy (Hattie, 2009; Liem, Lau & Nie, 2008). Research by Schunk (2004) in the area of goal setting builds on the ideas of Bandura and defines an appropriate goal as one that meets certain criteria within three properties: specificity, proximity and difficulty.

Goal Specificity

Specificity relates to the focus of the goal. The narrower the focus of a goal, especially if it is written in behavioural terms, the easier it is to attain, so if goals incorporate specific standards of performance, they enhance learning and increase motivation to a greater degree than general goals (Bandura, 1977). The teaching standards of the NSW Institute of teachers provide specific standards of performance for graduate teachers and therefore may be a practical way of setting goals for learning instructional tactics as progress towards the goal can be tracked.

In addition to the overarching goal of becoming a classroom practitioner, goals may be selected from the elements of the NSW Institute of Teachers GPTS and these may be narrowed down even further and pre-service teachers encouraged to develop their own specific goals for different instructional tactics. From this line of thought, it can be argued that pre-service teachers could perceive that the activities developed to teach instructional tactics relate directly to generic and specific personal goals, and therefore adopt a more positive frame of mind towards the teaching activities. Csikszentmihalyi (1997, p.137) supports this idea. "There is quite extensive evidence showing that even if one does not experience flow, just the fact of doing something in line with one"s goals improves the state of mind." These views are compatible with Bandura"s findings and support the stance of the NSW Institute of Teachers that provision of clear and expected standards will assist in improving the quality of teaching and learning over a period of time.

Goal Proximity

Goal proximity relates to how far goals project into the future. Proximal or short-term goals are attainable more quickly and lead to increased motivation (Schunk, 2004). As already stated, the GPTS are specific goals which set a clear direction for pre-service teachers, making them attainable. While this application may hold true for pre-service teachers in the final year of their course, it may not be as relevant for pre-service teachers in their first year as the proximity of the goals may be perceived as distant. This highlights the importance of establishing appropriate proximal goals throughout the duration of the course, which climax in achievement of specific GPTS at the end of the final year.

Goal Difficulty

Goal difficulty relates to "the level of task proficiency required as assessed against a standard" (Schunk, 2004, p.108). When a goal is challenging but attainable, motivation and self-efficacy increase. This contrasts with goals that are either too easy or too hard and puts the responsibility of choosing goals of appropriate difficulty on both those setting the tasks and those completing them. Learners who believe they are incapable of reaching a goal have low self-efficacy (Schunk, 2004). However, it should be noted that when a goal is self-generated rather than imposed, the level of commitment rises sharply and so does self-efficacy (Schunk, 2004). Although Csikszentmihalyi (1997, p. 61) states that "intrinsic rewards of work are easiest to see in the highly individualized professions, where a person is free to choose his or her goals and set the difficulty of the task", there is still room for application in an educational setting, where pre-service teachers can be encouraged to participate in their own goal setting. Furthermore, as Hattie (2009) points out, goals that are appropriately challenging can have a self-energising effect on learners. Also, when appropriate goals are set in collaboration with students and strategies implemented to help students achieve those goals, motivation increases and success follows.

The process of working towards goals that are suitable in terms of specificity, proximity and difficulty is an important one that impacts of individual‟s beliefs about their ability to attain goals.

Personality

Related to social learning is personality. Personality is a factor contributing to „optimal flow" that lies outside of the influence of teacher education programs, yet it deserves inclusion in this discussion, as it may explain why some pre-service teachers attain „optimal flow" in their teaching while others do not.

Csikszentmihalyi (1997) identifies people with autotelic personalities as being those who will more easily attain a state of „optimal flow". Derived from the roots „auto" meaning self and „telos" meaning goal, an autotelic activity is one undertaken for an intrinsic purpose, rather than achievement of an external goal. It is highly unlikely that a pre-service teacher will undertake class activities for the sheer joy that is derived from them, but it is anticipated that in the classroom, at a future date, there will be those occasions when everything comes together and „flow" is achieved. Autotelic people are more aware of their environment, including the actions, nuances and behaviour of people around them, and are willing to pay attention for inherent worth rather than immediate return.

Autoltelic people are also more likely to be active learners. Petress (2008) maintains that good role modelling, when accompanied by healthy rewards will enhance active learning. Active learning occurs when pre-service teachers are encouraged to take a vigorous and enthusiastic role in their own development of instructional tactics, and this can be achieved by structuring a series of vicarious and enactive learning experiences (See Figure 2.2), that promote participation, open inquiry and are personally satisfying.

Poulou (2007) identifies personality traits, when combined with ability and motivation, as sources of self-efficacy among pre-service teachers. This indicates that while individual factors may contribute to self-efficacy, it is a combination of factors that is most likely to have a positive effect on the beliefs of pre-service teachers about their ability to teach.

Csikszentmihalyi (1997, p.75) is quoted as saying, "It is not the skills we actually have that determine how we feel, but the ones we think we have". Building self-efficacy is about building a positive belief in one's self and the literature, in particular

studies by Bandura and Csikszentmihalyi in relation to self-efficacy present a strong argument for teacher education courses to encase the teaching of instructional tactics within a framework that gradually builds self-efficacy through both vicarious and enactive modelling, working towards clear goals, and providing a learning environment that is verbally and socially supportive, yet realistic.

RELATIONSHIPS BETWEEN GRADUATE PROFESSIONAL TEACHING STANDARDS AND SELF-EFFICACY

From relevant literature, it is clear that the most effective way to raise education levels in schools is to invest time and effort in teachers (McEwan, 2002). This is especially relevant in teacher education courses as it indicates the importance of teaching sound instructional tactics to pre-service teachers, and cautions against turning education into a theoretical discipline only. Furthermore, it highlights the importance of incorporating specific pedagogical skills into content areas, rather than dealing with pedagogy and content as discrete disciplines.

Although the literature reveals several areas of teacher effectiveness; that of pedagogical effectiveness (use of sound instructional tactics), not only stands alone as a clear indicator, but impacts significantly on other aspects of teachers" work. It must be noted, however, that this knowledge about „how" to teach is insufficient to ensure teacher effectiveness. It must be matched closely with high levels of instructional self-efficacy: the belief that one has the capacity to convert knowledge into practice in a classroom situation.

Self-efficacy and the role of teaching are closely linked, and the importance of establishing strategies to raise the levels of pre-service teachers" self-efficacy has been established by research (Albion, 1999; Brownwell & Pajares, 1999; Stanwick & Paynter, 1993). Inclusion of vicarious and enactive learning has been noted, and the relevance of providing success experiences in an empathetic social environment exemplified.

Tied closely to self-efficacy is the idea of „flow" as outlined by Csikszentmihalyi (1990). The value of providing high challenge, low threat learning activities that are

designed to meet goals in a socially supportive environment promotes optimal *flow*. If individuals have opportunities to experience the elation of success, coupled with a sense of control in an encouraging simulated environment, it can be assumed that this will raise levels of self-efficacy, and ultimately impact positively on performance in real life situations.

CONCLUSION

Literature indicates that effective pedagogy remains one of the key characteristics of quality teaching. Effective pedagogy entails competent use of instructional tactics and has bearing on the capacity of teachers to plan, to teach specific content, to communicate effectively, and to manage behaviour in a manner that promotes learning as the core business of classrooms.

Further, in order for pre-service teachers to reach high levels of effective pedagogy, they must perceive themselves as competent classroom practitioners and believe in their ability to help children learn. This perception, or instructional self-efficacy, is a critical factor emerging from the literature. Factors that enhance instructional self-efficacy include immersion in vicarious and enactive activities, providing social encouragement through feedback and quality learning environments, and goal setting. While teacher educators cannot inculcate instructional self-efficacy into pre-service teachers (Poulou, 2007), they may be able to provide a quality learning environment of rich experiences that will strengthen their instructional self-efficacy. The literature suggests that inclusion of these experiences will lead to successful mastery that forms a basis for instructional self-efficacy and impacts positively on the quality of teaching.

CHAPTER THREE

METHODOLOGY

INTRODUCTION

The field of educational research is somewhat problematic in that the complexity of working with human participants may result in answers which raise more questions, bringing a sense of incompletion to a study (Walker, 2006). The cyclic nature of educational research aims to "build systems based on theories and determine the effectiveness of these systems in practice" (Walker, 2006, p. 11). This study is a slice of one such system: that of improving the instructional self-efficacy of pre-service teachers in preparation for professional classroom practice.

The aim of the current chapter is to present a rationale for and description of the research instruments chosen for this study. It was decided that using a mixed methodology to ascertain pre-service teachers' instructional self-efficacy was beneficial to the study (Cohen, Manion and Morrison 2007).

There are two major advantages to using mixed methodology for this study. The first relates to the complexity of human behaviour and interaction (Cohen et.al., 2007) and the belief that a single research instrument may not be as reliable as two instruments that may converge and produce similar results in some aspects of the study. The second advantage is that mixed methodology may use both normative and interpretive techniques and therefore overcome the problem of "method-boundedness" (Cohen et.al., 2007, p. 113). This study used both a qualitative approach employing focus groups and a quantitative survey to collect data. The focus groups were carried out six months before the survey questionnaire was administered as it was thought they may help with the construction of the questions.

THE POPULATION

The population for this study was made up of pre-service teachers currently enrolled in Bachelor of Education (Primary) Degrees in New South Wales Universities and College. The researcher was unaware of any studies focusing on self-efficacy in instructional tactics and its relationship to the Graduate Professional Teaching Standards in this particular setting or with this particular group before.

THE SAMPLE

All pre-service teachers who were enrolled in the 2006 – 2009 Bachelor of Education (Primary) Degree at Avondale College were invited to participate in the study. Avondale College is a government accredited private provider of Christian higher education in Australia. All pre-service teachers had completed three professional experience placements in schools before participating in the research, and had completed a further three week session before completing the survey. It was important that the sample group have similar exposure to instructional tactics both within their course and in the classroom to rule out the possibility of significant differences being due to different levels of experience. The reasons for choosing this class of pre-service teachers were threefold.

- This group provided opportunity for the largest sampling in a single class (72 out of a total of 230 students enrolled the Bachelor of Education (Primary) Degrees at Avondale College.
- This was one of the first groups to receive significant exposure in the course to the Graduate Professional Teaching Standards set in place by the NSW Institute of Teachers (2006).
- This group had exposure to and experience in all of the instructional tactics intentionally taught in the Bachelor of Education (Primary) course. In addition they had covered several theories of behaviour and classroom management. In relationship to mandated areas, they had covered two modules in ICT and two English subjects, one related to personal communication skills and one curriculum subject devoted to the teaching of English. They had also completed two curriculum Mathematics subjects. This was important to the study as it was felt that the instructional self-efficacy of pre-service teachers in the earlier stages of their training

may be impacted by a lack of knowledge and understanding about teaching roles and expectations, as well as a lack of confidence in content and pedagogy.

For the survey component of the study, 71 of the 72 pre-service teachers from this class chose to participate: a better than 98% response rate. This group consisted of 15 males and 56 females which is comparable to the ratio of the total population for this study. The ages ranged from 19 to 42 years of age. There were 58 pre-service teachers from this class that volunteered to participate in the focus groups. Of these 11 were male and 47 were female.

ETHICS APPROVAL

Approval for the research project was granted by the Human Ethics Research Committee of Avondale College. All research activities were conducted in class time and all findings relate to the structure and effectiveness of the Professional Development subjects so pre-service teachers were happy to participate. Although conducted during class time, participation in both the focus groups and questionnaires was voluntary with no penalties for those who chose to abstain from participating. No coercion was used, and possible participants were briefed on the purpose and intent of the study through an information sheet (See Appendix 2). Confidentiality was strictly maintained, and permission sought and obtained from participants to audio record their focus group responses.

ASSUMPTIONS

A number of assumptions were made in the course of this study.

1. It was assumed that similar exposure to the practical aspects of the course in chosen school settings provided similar experiences for all pre-service teachers.
2. It was assumed that the pre-service teachers had commenced their course at Avondale College and therefore had been exposed to the same learning experiences,

or, that students transferring into the course from other colleges or universities had been exposed to similar learning experiences.
3. It was assumed that participants would be relatively free from inhibition in expressing their ideas in focus groups due to the positive relationships already established within the class.

The two instruments used for data collection will now be considered in more detail.

RESEARCH INSTRUMENTS

FOCUS GROUPS

The use of focus groups is growing in educational research (Cohen et al. 2007) and the practice of interacting with groups of people rather than individuals is gaining popularity in qualitative research (Veal, 2005). Loosely structured on group interviews, focus groups differ in that the outcome is not dependent on an interviewer asking questions, but rather on the interaction of the participants as they discuss a question that is posed. This process is designed to safeguard against any bias or agenda an interviewer may hold and produces data that is a valid representation of the participants‟ thoughts and ideas. Cohen et al. (2007) point out that focus groups are somewhat contrived as the participants may not interact as freely in an unnatural setting. In the case of this study, the focus groups already existed as small tutorial groups, and it is felt that this would facilitate open discussion and the transmission of ideas.

Focus groups are useful for:

- setting the context for a particular area of study;
- developing categories;
- generating themes from the collective group insights and data;
- generating and evaluating data from sub-groups of a population;
- gathering feedback from other studies.

In this study, the expected outcome of the focus groups was to gain data that would set the direction for the study and develop themes that could also be useful for

informing the construction of the questionnaire. In addition, it was believed the focus groups might provide insights into how instructional self-efficacy could be fostered within a teacher education program.

It was decided that four focus groups would provide workable sized groups. One tutorial group that was run consisting of four people was deemed too small a group for effective discussion and the members were invited to join another group for the purpose of this exercise. The average size for the groups was 14.5 people, slightly larger than the recommended maximum size of twelve (Veal, 2005). In this case, although there was animated discussion, the groups did not fragment or become unwieldy, which is the main reason for limiting the size. Fifty minutes was allocated for each focus group discussion.

As the students had spent the semester together in small class groups, it was felt the environment would not be threatening to them. In order to ensure accuracy of the data, permission was gained from each group to audio-record the discussion. The primary role of the interviewer in focus groups is to promote discussion, keep the focus group on track and maintain the open-endedness of the discussion. Additionally, the facilitator may also need to ensure equal participation by all rather than allowing individuals to dominate the discussion (Drew, Hardman & Hosp, 2008). In the four focus groups that were established, each group received the same question: "What specific learning activities in the subject PP271 are likely to improve your belief that you will be successful in using instructional tactics in the classroom?" Minimal prompting ensured that the ideas were generated by the pre-service teachers and not prompted or influenced by the researcher, although some clarification occurred.

QUESTIONNAIRE

A questionnaire was chosen by the researcher for the second section of the study. It was felt that quantitative methods were appropriate for establishing relationships between the variables under consideration.

Several research instruments have been developed for the purpose of identifying levels of general teacher self-efficacy. One devised by Gibson and Dembo (Woolfolk Hoy & Spero, 2005) aimed to identify general teaching efficacy and personal teaching efficacy by using 30 items on a 6 point Likert scale. Bandura (1997) constructed a teacher self-efficacy scale consisting of 30 items on a 9 point scale. Other measures of teacher efficacy included the use of forced-choice items by Webb and norm-referenced vignettes by Ashton (Tschannen-Moran & Hoy, 2001). Rising from these attempts to measure teacher efficacy has come the observations that teacher efficacy is both "context and subject-matter specific" and "that teachers" sense of efficacy is not necessarily uniform across the many different types of tasks teachers are asked to perform, nor across different subject matter "(Tschannen-Moran & Hoy, 2001, pp.790, 791,). Poulou, Spinthourakis and Papoulia-Tzelepi (2002) further point out that it is the interplay between the teaching task (challenge) and the teaching ability (skill) that influences instructional self-efficacy (See Figure 2.1). Keeping these issues in mind, a questionnaire was constructed that could be used to measure instructional self-efficacy across selected elements of the NSW Institute of Teachers GPTS.

The general aim of the questionnaire was firstly to determine the pre-service teachers" instructional self-efficacy with respect to three mandatory areas of study; literacy, numeracy and ICT use (NSW Institute of Teachers Graduate Professional Teaching Standards). Secondly, the aim was to explore possible relationships between the NSW Institute of Teachers Professional Practice Domain: (Planning, Communication, Management) and pre-service teachers" instructional self-efficacy.

The questionnaire (See Appendix 3) was administered at the end of first semester, 2008. The questionnaire comprised two main sections. The first section related to how the pre-service teachers perceived themselves as students, and the second section related to their instructional self-efficacy as teachers. A six point Likert scale was used to record responses. The Likert scale required participants to "indicate their agreement or disagreement with a proposition or the importance they attach to a factor, using a standard set of responses" (Ticehurst & Veal, 2000, p. 156). The benefit of using a Likert scale in this study was that it allowed differentiation in

responses yet generated numerical value (Cohen et al. 2007). A forced-choice response scale of six agreement/disagreement options was implemented.

Pilot Testing

Initially a bank of 80 statements was generated covering five sub categories; (Academic Performance, Content [Numeracy, Literacy and ICT use] Planning, Management and Communication). These pilot statements were then subjected to a rigorous examination by colleagues and a small group of pre-service teachers for clarity, brevity, intention, singleness of purpose, overall balance and time taken to complete the questionnaire. This quality assurance process resulted in a questionnaire of 50 items (See Appendix 3), including the questions outlined in Figures 3.1 – 3.5.

Figure 3.1 Teaching Standards Element 3: „ability to plan effectively" items

	Perceptions towards planning
Q.	**Item**
8	I put considerable time into planning lessons/units of work
11	I perceive that my best lessons do not follow my planned lessons (reverse)
12	I think detailed planning is a waste of time (reverse)
13	I enjoy seeking out information for use in lessons/units
25	I follow my lesson plans carefully when I am teaching
27	I often deviate from prepared lesson plans (reverse)
34	I write detailed lesson plans

Figure 3.2 Teaching Standards Element 4:"ability to communicate effectively with students" items

	Perceptions towards use of communication
Q.	**Item**
16	I lead discussions effectively
17	I use questioning effectively
23	I support my teaching with a wide variety of resources/materials
42	I link new knowledge with prior learning in most lessons
44	I vary my teaching tactics
46	I model exemplary language
47	I make learning purposeful

Figure 3.3 Teaching Standards Element 5: „ability to manage student behaviour" items

	Perceptions towards ability to manage student behaviour
Q.	**Item**
9	I promote a positive class ethos
35	I generally agree with my supervisor"s evaluation of my rapport
28	I maintain pupil interest when teaching
30	I make effective use of non-verbal communication
38	I build positive relationships with my students
14	I feel „in control" of the class when I am teaching
40	I feel that students respond positively to my requests
22	I am aware of student behaviour when teaching

Figure 3.4 Teaching Standards Element 1 Content: „ability to teach English" items

	Perceptions towards teaching English
Q.	**Item**
7	I enjoy teaching English
26	I am generally confident teaching English
29	I enjoy teaching grammar
31	I feel competent to teach a variety of text types
32	I believe I could teach children to become proficient readers
37	I can competently teach all English skills
41	I use meta-language when teaching English

Figure 3.5 Teaching Standards Element 1 Content: „ability to teach Mathematics" items

Q.	**Perceptions towards teaching Mathematics**
	Item
21	I am generally confident teaching Mathematics
43	I enjoy teaching Mathematics
48	I am not confident teaching some topics in Mathematics (reverse)
24	I dislike teaching Stage 3 Mathematics (reverse)
36	I worry I cannot teach mathematical concepts effectively (reverse)

Although breaking the questionnaire into logical sections with headings is common practice (Cohen et al., 2007), in this case the questions relating to five of the variables (Academic Performance, Content [Numeracy, Literacy and ICT use] Planning, Management and Communication) on the final questionnaire were scrambled rather than kept in five discrete areas to minimise the participants from responding similarly to statements under a heading. In addition, some statements were framed in the negative to ensure each individual statement received due consideration.

Background Factors

The only demographic data collected was the age and gender of the participants. It was not felt that additional demographic information (e.g. ethnicity, religion, previous qualifications) would add to the intent of this study in any way.

Sub-Categories

The first of five sub-categories related to the participants‟ perceptions of themselves as students, and the remaining four related to the elements of the Graduate Professional Teaching Standards that specifically dealt with instructional self-efficacy and instructional tactics. Each of these will be addressed separately.

Academic Performance

Six statements were offered with the intent of establishing the pre-service teachers‟ perceptions of themselves as PP271 students. This was achieved by having the respondents rate the enjoyment and success of a number of stated academic tasks pertaining to this subject. (See Appendix 3: Q 1-6)

Content – Teaching Standards Element 1

The data collected in this section related to instructional self-efficacy in terms of literacy, numeracy and ICT (mandatory areas of study).

Mandatory Area of Study – Literacy (NSW Institute of Teachers)
Eight of the statements related to teaching English. (See Figure 3.4)

Mandatory Area of Study – Numeracy (NSW Institute of Teachers)
Five of statements related to teaching Mathematics. (See Figure 3.5)

Mandatory Area of Study – ICT (NSW Institute of Teachers)
Two of the statements related to computers and the use of technology as a teaching tool. (See Appendix 3: Q19, 45)

Finally, two of the statements were related to general content knowledge required to teach in a primary classroom (Q33, 50).

The selection of Teaching Standards - Element 1 was reinforced in two ways. First, the literature (Ramsey, 2000) indicated that content and instructional tactics were strongly correlated and this was an opportunity to test if this held true for this study. Second, focus group three suggested that learning content matter more comprehensively would increase their confidence and went so far as to indicate the areas of literacy and numeracy (mandated areas) as key areas that would build instructional self-efficacy.

Planning- Teaching Standards Element 3

This section of the instrument collected data relating to the participants" perceptions of themselves as effective planners for classroom teaching. Questionnaire statements related to lesson planning and the ability to make effective use of curriculum and other planning documents (See Figure 3.1). A consensus of opinion from one focus group related to the ability to plan lessons effectively using appropriate documents which also reinforced the use of Element Three in the questionnaire.

Teaching Tactics/Communication – Teaching Standards Element 4

The questionnaire statements relating to Element 4 deal specifically with questioning skills, ability to lead a discussion and aspects of communication on which instructional tactics are built (See Figure 3.2) The discussion from all four focus groups indicated that these skills were foundational to sound instructional tactics, a theme which emerged also from the literature (Morgan & Saxton, 2006; NSW Institute of Teachers, 2006)

Management – Teaching Standards Element 5

The statements in this section of the questionnaire were generic statements relating to general classroom management, behaviour management and classroom ethos (See Figure 3.3). These statements link closely to the second goal of the NSW Quality Teaching Model: "to create classrooms where students and teachers work productively in an environment clearly focused on learning" (McLeod & Reynolds, 2007, p. 46).

Data Collection

The voluntary, confidential questionnaire was administered during a regular class period by the researcher. Students were not allowed to confer with each other as this was an individual task.

Data Analysis

The data from the questionnaires were entered into the statistical software package SPSS 16.0 (SPSS Inc, 2007). Descriptive statistics for each question and sub-scale were determined. Independent groups t-test and one-way between groups ANOVA with post-hoc comparisons was run to locate any area of significance in the data. In addition a linear regression analysis was used with all independent variables entered into the regression equation in order to explore the relationship between sets of individual variables and the dependent variable. Reliability for each scale was checked using Cronbach‟s Alpha. Results of the analysis are provided in Chapter Four.

CONCLUSION

This chapter has outlined both the approaches to and instruments used in the study, and provided a rationale for their use. In addition to providing an overview of the methodology, it has indicated the population, the nature of the samples, and assumptions made about the sample. The following chapter will provide a summary of the results obtained from both the qualitative and quantitative research instruments.

CHAPTER FOUR

RESULTS

INTRODUCTION

As mixed methodology was employed, this study had two separate but complementary components. To present the findings clearly, the results are presented as they relate to the research questions. Since the purpose of research question one was to identify the perceptions of pre-service teachers in relation to instructional self-efficacy, and to develop possible themes that might inform the questionnaire, the results of the focus groups will be presented first. By contrast questions two and three deal with the relationships between instructional self-efficacy and intermediate variables, and are informed by the results of the questionnaire.

FOCUS GROUPS RESULTS

The focus groups" interaction was guided by the following research question;

Research Question 1: What elements of the Bachelor of Education (Primary) courses are perceived by pre-service teachers at the midway point of their course to increase instructional self-efficacy?

Each focus group was asked the following question: "What specific learning activities in the subject PP271 are likely to improve your belief that you will be successful in using instructional tactics in the classroom?" Pre-service teachers were asked to think of the instructional tactics that they were most confident using in a classroom situation. Then they were asked, collectively, to identify factors in the course program they felt had contributed, or were likely to contribute to raising their confidence, or self-efficacy in using those instructional tactics in a classroom. Pre-service teachers were asked to limit these factors to ones within the course. This ruled out factors such as negative classroom experiences and personality, over which the course facilitators have no jurisdiction. The groups were also asked to identify which

factors contributed to their understanding and which contributed to their confidence. Because the Professional Development and Experience subjects contain two components, one face-to-face in classes and one on placement in a school environment, the aim was to discover if, and how, the course work during the semester impacted on their instructional self-efficacy while on professional experience in the classroom. There was one participant who made a direct link between the theoretical and practical components of the course with the comment, "Making the [instructional] tactic part of our professional experience assignment is good because otherwise I might never try them." All other participants assumed that the purpose of class activities was to build skills and confidence for classroom experiences both during the course and as a practitioner after graduation, and their comments were made with this assumption in mind.

Each focus group (FG1, FG2, FG3 and FG4) came up with a series of factors which they were asked to prioritise, with a ranking of one for most important factor and the highest number for the least important factor. Animated discussion followed as a consensus of opinion formed, with three groups (GF2, GF3, FG4) ranking their responses hierarchically and the other group (FG1) ranking four factors at number one, and other factors below them. For this later group, all four top factors were given a ranking of one, then further factors were ranked from five onwards.

The list of factors identified by the pre-service teachers as contributing to instructional self-efficacy was then thematically clustered, resulting in fifteen separate contributing factors. These contributing factors were then rated according to two criteria; order of ranking and frequency of response (See Table 4.1). In this table, the „Y" indicates which focus groups discussed this particular factor (frequency) and the number indicates the importance [ranking] each focus group gave to specific factors.

Table 4.1 Focus groups‟ factors rating

Factor	**FG1/ Ranking**		**FG2/ Ranking**		**FG3/ Ranking**		**FG4/ Ranking**	
Tactics booklet - Booklet of all the tactics and strategies in them, including examples of lessons and all KLAs	Y	1	Y	4	Y	1	Y	1
Lecturer models tactic in lectures. Show and Tell lectures. Lectures	Y	2	Y	1	Y	7	Y	2
Micro-teaching - adapt concept to different levels within the same tutorial session. Small groups of 3-5 people. Practise microteaching in front of children instead of adults. It would make it easier. Provide peer evaluations when doing micro-lessons. Including asking questions as you do it.	Y	=1	Y	3	Y	4, 5, 6	Y	3
Demonstration lesson at school – but would like higher participation, same classroom and must have debriefing	Y	5	Y	5			Y	4
Video links of lessons in lectures					Y	2		
Collect and collate student lesson plans	Y	=1						
Set questions for (de Bono)hats for stages	Y	=1						
Presentations	Y	4						
Put stuff on E-reserve	Y	7						
Repeated different ways and for different age groups. Watch more demonstrations across more KLAs and stages to adapt to more ages.			Y	2	Y	3		
Lectures			Y	6				
Enjoy different strategies					Y	8		
Learn more basic literature and maths. Provide optional classes.					Y	9		
Learn content matter more comprehensively					Y	10		
Reading and essays. Put them into practise instead of just writing them. Readings/essays					Y	11	Y	5

Instructional tactic booklets

In the previous Professional Development and Experience subject, pre-service teachers had been given a booklet containing a summary of instructional tactics presented to PP270 students as part of their resources. The booklet contained explanations, diagrams, and pointers on how each instructional tactic introduced that semester could be used effectively in a classroom. As the pre-service teachers had

already received one such booklet and used it during their previous professional experience placement, their choice to place this item at number one was based to some degree on experience. Three groups placed this item at number one and Focus Group Three placed it fourth.

The pre-service teachers were able to articulate their reasons for their choice. The booklets enabled pre-service teachers to have a ready reference to help them match instructional tactics to lesson content and stage, and it helped jog their memory of tactics they had seen demonstrated.

One student said, "We forget exactly how some things, for example, how cooperative learning structures work, and having a booklet with the pictures gives us confidence to try them." Other comments followed a similar theme.

> "The cooperative learning book was so good…we need one like that for all instructional tactics."
>
> "We've learnt about this…and we've learnt about this….but we don't always have it all together in the same place."
>
> "A booklet with cues in it…with all different tactics."
>
> "I'm really confident with concept attainment, my problem is coming up with ideas for the lessons. Maybe a booklet with ideas how we use it at different levels."
>
> " I like to have something there that I can refer back to"
>
> "We come here and learn about it, but then we forget them and when we get out there in the classroom we forget, so it would be useful to have a booklet."

Comments from two groups also highlighted the limitations of the booklet. "The booklet's no good if we haven't seen the [instructional] tactic. I didn't even know what some of the [instructional] tactics on our list were." This was followed by general agreement of the group, and "The booklet….yeah….with pictures was useful." This was followed by the comment, "It's no good getting a booklet without doing all the other things [lectures, micro-teaching, demonstration lessons] though".

While Focus Group One placed high importance on the contribution of planning to their confidence levels, and wanted to create a bank of lesson plans incorporating a variety of instructional tactics at all stages of the primary school curriculum which could be circulated to all pre-service teachers in booklet form, other groups restricted the booklet to an explanation of instructional tactics.

The overall consensus of opinion was that a booklet containing the instructional tactics, along with ideas for implementing them in the classroom, greatly improved their confidence in using some of the instructional tactics. All groups acknowledged, however, that a booklet by itself, without the lead up of learning or practising the tactics, would not be nearly as effective.

Modelling of tactics in class by lecturer

All groups included the modelling of instructional tactics in class by the lecturer as a factor in developing instructional self-efficacy. Focus Group Two gave it first ranking while Focus Groups One and Four ranked it second. Focus Group Three placed it well down their ranked list, however, it should be noted that rankings four, five and six for this focus group all went to various components of micro-teaching which were identified as separate factors. If these rankings are treated as one, then modelling of tactics in class assumes a higher ranking.

The students had a range of comments to make on modelling. One comment, which was typical of all groups said, "…worked very well when we were doing cooperative learning. The structures were modelled…..I felt more confident about teaching a micro-lesson." The modelling of cooperative learning came up in all focus groups, and the sample comments below, relate to this instructional tactic. "We did it in class. We were actually the kids, except we used the content for our class." Another participant qualified their group"s comments by saying, "It"s good [speaking of demonstrations in lectures] but….I think we need a bit more practice."

In response to the facilitator‟s question, “Is it worth modelling tactics in lectures? There was a group chorus of “Yes,” elaborated by the following comments. “Show and tell lectures are better than just using a Powerpoint,”
and “Lectures are good because [the lecturer] actually shows…and tells.” There was also agreement that modelling of individual tactics worked best when it was ongoing, rather than a one off demonstration. Pre-service teachers also commented on other instructional tactics besides cooperative learning that were modelled. One participant commented about the instructional tactic of guided discussion, “The way [the lecturer] did it with us in tutorials…that whole lesson on Antarctica…it really helped me understand it.”

Micro-teaching

Micro-teaching occurs in small groups of up to twelve people and gives opportunity for pre-service teachers to practise their instructional tactics in a simulated classroom situation. It is a form of peer-modelling where pre-service teachers participate as both models and observers. This factor generated the most discussion time wise, and although all groups agreed that it was an important factor in building confidence, it was clear from the discussion that there was room for improvement as the following comments indicate. “Sometimes we are too rushed. I‟d like to discuss what happened a bit more but we run out of time.” Another participant pointed out that “Some presentations are great, but if they‟re not quality, you don‟t get much from them.”

Overall, however, there was consensus from the groups that this was an important factor in improving instructional self-efficacy. Several comments related to the benefits of involvement in the teaching process. “Well, I reckon our tutorials were really good, especially the ones where we had different students playing roles and we had to teach them,” and “For me, it‟s more hands on when I actually have to do it, ” followed by “You know how when you learn something, you understand it, but when you do it, it makes it much better.”

Most agreed that micro-teaching group sizes should be kept to eight participants or less, with one group suggesting three to five as the optimum size. One group

expressed the opinion that it would be easier if they could practise on children, instead of their peers. One pre-service teacher suggested "I"d like to practice on a small group of children," and another responded, "It would be easier…but I don"t think it would give me more confidence," while another added the thought, "Doing it with kids would be a more accurate representation of what really happens."

Comments not only related to the benefits of enactive participation, but vicarious participation. One participant said, "Some of the tutorials I"ve seen are heaps good, and I wouldn"t mind having a copy of their lessons plans," while another commented, "I enjoyed watching everyone else"s ideas and how they taught them."

When asked which strategies improved both understanding of the instructional tactic and confidence in using it, participants responded as follows. "The micro-teaching gives us both understanding and confidence;" "I think being able to participate in teaching the [instructional] tactics…..yes [agreement from others in group], and watching other people as well," and "Having the opportunity to do it."

Several participants commented on the social supportiveness of having small groups. "With micro-teaching I found that….when you"re in a small group….you"re there to support each other and it"s much easier when you"re all in it together."

One participant in one group asked the question, "Would there be a benefit in getting your own lesson video-recorded so you could watch yourself teach?" This idea was not popular, although students conceded it could be a valuable exercise.

One group expressed a desire to see the instructional tactic modelled for different stage levels, to prepare them for any age group on their professional experience, and another group felt that peer evaluations would be helpful. "Sometimes it can be very daunting….maybe peer evaluations could help you." The final comment of note related to being able to stop during a micro-lesson and ask questions or seek clarification before continuing. "Sometimes I have a question, but by the end, I"ve forgotten it," and "I would like to ask questions like….What is happening? I need the feedback right then and there." Another pre-service teacher said "I would like

feedback when I am doing my lesson…. It‟s a good idea because sometimes you go through a whole lesson and don‟t know you‟re screwing it up.”

In response to the comment, “I make mistakes,” [when teaching a micro-lesson] another pre-service teacher responded, “It‟s better to make them now than in the classroom.” There was an element of anxiety related to micro-teaching but in summary, all groups agreed on the value of micro-teaching as a way to increase instructional self-efficacy and the comment, “I don‟t like it, [teaching in front of my peers] but it‟s good,” is indicative of how pre-service teachers generally felt.

Demonstration lessons

Demonstration lessons occur at the local demonstration school and are observed either directly in the classroom or via live feed video to a separate building. They take the form of a half hour lesson where an experienced teacher demonstrates a pre-determined instructional tactic in the classroom. This strategy was rankest lowest out of those which were considered significant factors in determining instructional self-efficacy. Focus Groups One and Two gave demonstration lessons a ranking of five, Focus Group Four gave them a ranking of four, and Focus Group Three did not even rank them (See Table 4.1). Pre-service teachers gave reasons for their dissatisfaction with demonstration lessons.

One reason related to malfunctioning technology or the constraints of watching a classroom through live-feed video. “It‟s hard to know what‟s going on,” “The sound isn‟t clear……you can‟t hear,” “You can‟t see the whole classroom, only a tiny bit,” were typical of comments relating to the technical side of demonstration lessons. However not everything about the technical side was negative. A positive aspect of the live feed video was revealed in this comment, “If you‟re watching it [demonstration lesson by live video feed] and [the lecturer] makes comments, it‟s good.”

One participant‟s opinion was that demonstration lessons were “A waste of time,” but this view was not widely held as demonstrated by the response, “No, not

completely…sometimes it"s good," and "The demonstrations at the school do give us some ideas." It was interesting that several participants agreed with the opinion, "I think we need to watch more than one [demonstration on each tactic]. It"s not enough. It doesn"t show enough. I would like at least two in different KLAs…and different stages."

Another reason for dissatisfaction related to pre-service teachers feeling detached from the learning environment, particularly if they were viewing the live feed. Several comments, including, "I would like to watch the teacher and then help in the classroom……I think that would be a bit hard to organize," related to desiring higher levels of participation but at the same time recognised the difficulty of implementing it with a whole class of over 70 pre-service teachers. Another participant wanted "A higher level or participation when we go out to the school," but failed to indicate how this might be achieved.

Focus Group Three did not include demonstration lessons as a factor in increasing instructional self-efficacy. They did, however, suggest an alternative. Instead of demonstration lessons, this group proposed the inclusion of video clips in lectures and they ranked this second in importance (SeeTable 4.1). This is not current practice in the course so they were expressing a strategy they perceived would assist in increasing instructional self-efficacy. This idea was initially expressed as the question, "What would be wrong with putting it on a video so we can see it in class and then (the lecturer) could point out what is happening?" The discussion that followed resulted in its inclusion in their final list of strategies.

Focus Group Three also ranked lecturer modelling at seven (See Table 4.1), rationalising that a video demonstrating the tactic could be explained by the lecturer as part of a class and therefore negate both the need for lecturers to demonstrate tactics, and visits to the demonstration school which they found quite unsatisfactory in terms of building their skill and confidence.

Other groups recognised the value of observing instructional tactics in a classroom setting, but recognised the physical limitations. "It"s good if you"re in the classroom…but not as good, watching it on live feed." Three groups highlighted the

importance of a comprehensive debrief session after the demonstration lesson where they could ask questions and have points clarified. One participant said, "Sometimes it doesn"t make sense and I never get to find out what he [the teacher] was trying to achieve," while another commented, "When we all leave and don"t debrief straight away, we forget about it." This was backed up by other participants, with the comments, "Maybe if we could debrief after dem [demonstration] lessons it would be more useful," and "After we go to the school, to come back and discuss what is happening"……[would be helpful].

Other less significant factors

Two focus groups listed readings and essays as useful, but not effective at building confidence for classroom teaching. "We need to know it and it"s important, but it doesn"t give me confidence." Some of the discussion in Focus Group Three centred on a more comprehensive understanding of content, especially in the areas of literacy and numeracy. Participants felt this would give them more confidence when using instructional tactics in the classroom as the related comments following indicate.

> I feel more confident when I understand the content.
> When we went to the school I hadn"t even heard of the [phonics] rules that teacher was talking about.
> [General agreement and some discussion about what the rules were that the teaching was talking about.]
> Maybe we need to become more competent in those areas [literacy and numeracy].
> Yes.
> We get some of that in our subjects.
> [Extended discussion on how much literacy and numeracy content is needed in their subjects.]
> Classes that are too easy are just as useless as classes that are too hard.
> Then let"s have optional classes to improve content, especially numeracy and literacy.

Although this group spent considerable time discussing the content issue, it was not reflected in their final analysis which placed literacy/ numeracy and content at ninth and tenth place out of eleven items on their list.

Some other minor factors were identified by individuals, but not supported by the groups as a whole as being major contributors to instructional self-efficacy. These

included class presentations [as distinct from micro-lessons], access to materials on e-reserve, and essays and readings.

Comments relating to variety and frequency of strategies

As each focus group was asked to list strategies used in the course delivery that increased instructional efficacy, there was no formal discussion directed specifically towards the frequency or variety of the strategies. Only Focus Group Three listed enjoyment of a variety of activities as a factor in building instructional self-efficacy. The discussion in each group, however, did yield a number of comments relating to variety and frequency of strategies, and these have been included in the results as they are considered significant to the study. Most of these comments were in response to the question, "What gives you confidence to teach an instructional tactic, and what gives you understanding? One participant commented, "The ones [micro-lessons] where you teach improve your confidence. The ones [micro-lessons] where you watch improve your understanding." Another comment was "The more times you're exposed to something, the more confident you become," and other pre-service teachers gave examples to support this statement. "The concept attainment was really good, because we got it in a lecture, then we saw it at the school, then [the lecturer] demonstrated for us and finally we got to teach it ourselves;" and "[the lecturer] spent about 5 minutes on each one [cooperative learning structures], we did it in micro-teaching and [the lecturer] gave us a booklet." …"We get that [a progression of things] pretty much." Other, more general comments related to the frequency of exposure. "When it [an instructional tactic] is repeated it's good. I don't always get it the first time." One person said, "The more I see it, the easier it becomes." Another participant asserted, "We have to repeat it more ways than one," indicating that variety in exposure was an important consideration.

SUMMARY

Four perceived significant contributors to instructional self-efficacy clearly emerged from this process. These were, in order of importance placed on them by the focus groups:

1. instructional tactic booklets;
2. modelling of instructional tactics in class by lecturer;
3. micro-teaching; and
4. observation of demonstration lessons.

Other factors such as content knowledge, mandatory areas (Literacy and Numeracy) and planning were also identified in the focus groups, as influencing pre-service teachers‟ confidence in the classroom. Several other factors were suggested by individuals within the focus groups, but there was limited support for these from other group members. The feedback from the pre-service teachers suggested that instructional self-efficacy and these other factors could be inter-related. These data helped inform the nature of the survey questionnaire and offered an opportunity to explore such possible relationships

QUESTIONNAIRE SURVEY RESULTS

The remainder of the chapter provides the results of the questionnaire.

Instrument Analysis

The internal reliability of each of the teaching standard elements sub-categories within the survey instrument were calculated using a Cronbach alpha index. These indices lay between 0.626 and 0.884, an acceptable range. The Cronbach alpha index for each sub-category and the respective questions for each sub-category are shown below in tables 4.2a, 4.2b, 4.2c, 4.2d and 4.2e.

Table 4.2a Teaching Standards Element 3: „ability to plan effectively‟ items

	Perceptions of use of planning strategies, Alpha = 0.626
Q.	**Item**
8	I put considerable time into planning lessons/units of work
11	I perceive that my best lessons do not follow my planned lessons (reverse)
12	I think detailed planning is a waste of time (reverse)
13	I enjoy seeking out information for use in lessons/units
25	I follow my lesson plans carefully when I am teaching
27	I often deviate from prepared lesson plans (reverse)
34	I write detailed lesson plans

Table 4.2b Teaching Standards Element 4: „ability to communicate effectively with students" items

	Perceptions of communication strategies, Alpha = 0.776
Q.	**Item**
16	I lead discussions effectively
17	I use questioning effectively
23	I support my teaching with a wide variety of resources/materials
42	I link new knowledge with prior learning in most lessons
44	I vary my teaching tactics
46	I model exemplary language
47	I make learning purposeful

Table 4.2c Teaching Standards Element 5: „ability to manage student behaviour" items

	Perceptions of use of student behaviour management strategies, Alpha = 0.751
Q.	**Item**
9	I promote a positive class ethos
35	I generally agree with my supervisor"s evaluation of my rapport
28	I maintain pupil interest when teaching
30	I make effective use of non-verbal communication
38	I build positive relationships with my students
14	I feel „in control" of the class when I am teaching
40	I feel that students respond positively to my requests
22	I am aware of student behaviour when teaching

Table 4.2d Teaching Standards Element 1 Content: „ability to teach English" items

	Perceptions of self-efficacy in teaching English, Alpha = 0.770
Q.	**Item**
7	I enjoy teaching English
26	I am generally confident teaching English
29	I enjoy teaching grammar
31	I feel competent to teach a variety of text types
32	I believe I could teach children to become proficient readers
37	I can competently teach all English skills
41	I use meta-language when teaching English

Table 4.2e Teaching Standards Element 1 Content: „ability to teach Mathematics" items

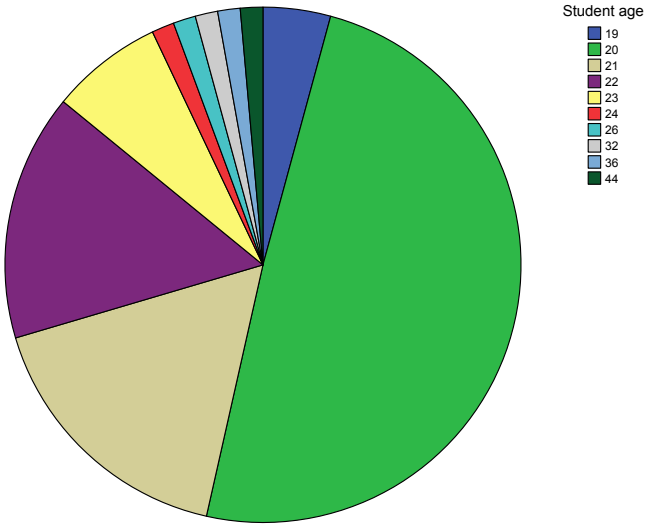
Q.	Perceptions of instructional self-efficacy in teaching Mathematics, Alpha = 0.884
	Item
21	I am generally confident teaching Mathematics
43	I enjoy teaching Mathematics
48	I am not confident teaching some topics in Mathematics (reverse)
24	I dislike teaching Stage 3 Mathematics (reverse)
36	I worry I cannot teach mathematical concepts effectively (reverse)

Sample

The sample consisted of 71 pre-services primary teachers enrolled in the subject PP370. 22% were male and 78% were female. Although this appears to be an uneven distribution it follows the distribution pattern for pre-service teachers enrolled in this course.

The age of the participants ranged between 19 and 44 years, as shown in Figure 4.1, with an average age of 21.9 years.

Figure 4.1 Age distribution of participants



Questionnaire data

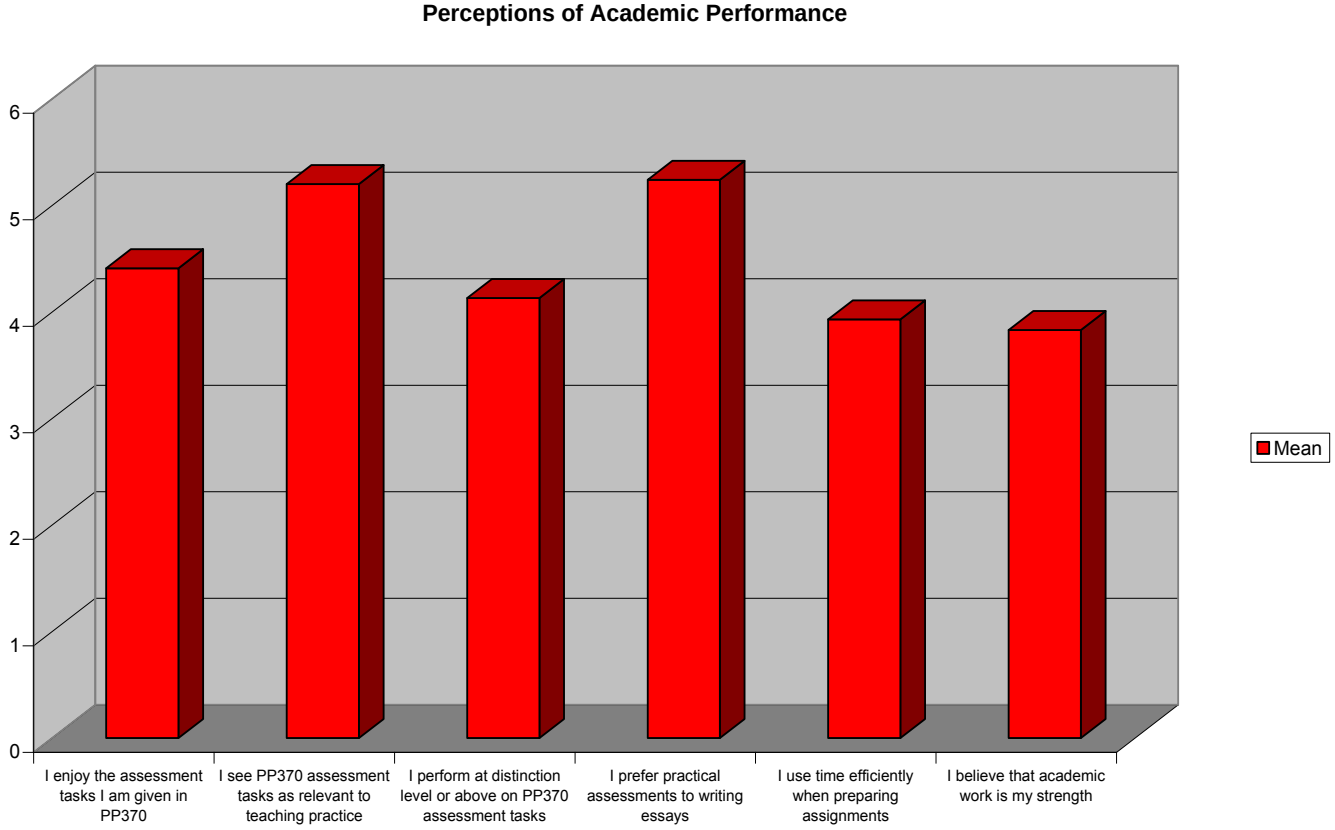
The questionnaire data analysis was firstly guided by the following research question;

Research Question 2: What are the pre-service teachers‟ perceptions of themselves, as students in the subject PP370, and particularly in relationship to four of the seven elements of the NSW Institute of Teachers Graduate Professional Teaching Standards (Content [instructional self-efficacy in terms of literacy and numeracy], Planning, Management and Communication?)

Attitude to Academic performance

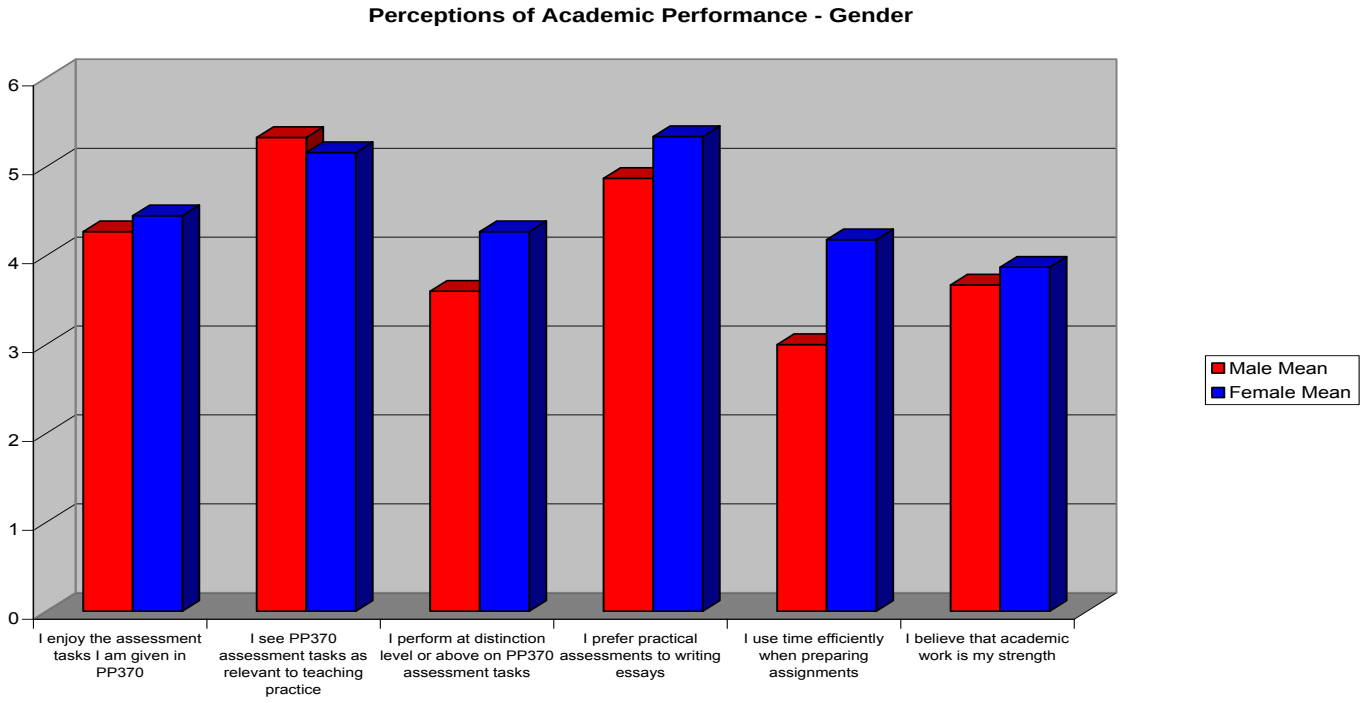
The mean values (on a one to six Likert scale, with six indicating total agreement and one indicating total disagreement with the positive statement presented) of pre-service teachers perceptions of their own academic performance (the vertical scale in Figure 4.2) in and attitude to the Professional Development subject PP370 are shown in Figure 4.2. These means are all relatively high with a maximum of 5.24 for „I prefer practical assessments to writing essays‟, and a minimum of 3.83 for „I believe that academic work is my strength.‟

Figure 4.2 Distribution of scores for the respective elements of academic performance in PP370



When considering perceptions of Academic Performance for males and females separately, the data suggests that the females generally perceive themselves as more academically able, but this difference is only significant at the 0.05 level for the statement - "I use time efficiently when preparing assignments." (See Figure 4.3)

Figure 4:3 Distributions of scores for respective elements of academic performance in PP370



It was found that there was no significant difference in the academic performance items for the different age groups (19-20 years, 21-22 years, 23+ years).

Perceived Competency in Using the Instructional Tactics: planning, communication and management

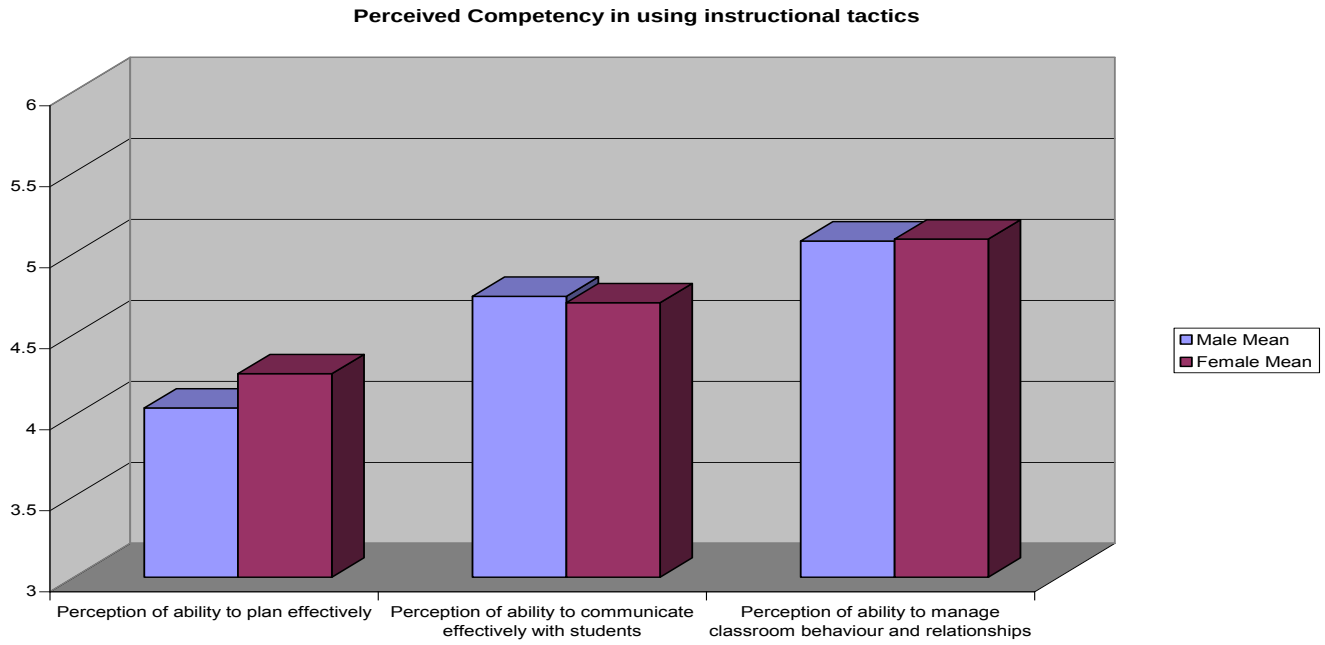
The means and standard deviations of the perceived competency in using the instructional tactics as outlined by the Graduate Professional Teaching Standards of the NSW Institute of Teachers are shown in Table 4.3a below.

Table 4.3a Means and standard deviations for instructional tactics

Element	Mean	Standard Deviation
Perception of ability to plan effectively	4.2113	.64053
Perception of ability to communicate effectively with students	4.7022	.48340
Perception of ability to manage classroom behaviour and relationships	5.0845	.38659

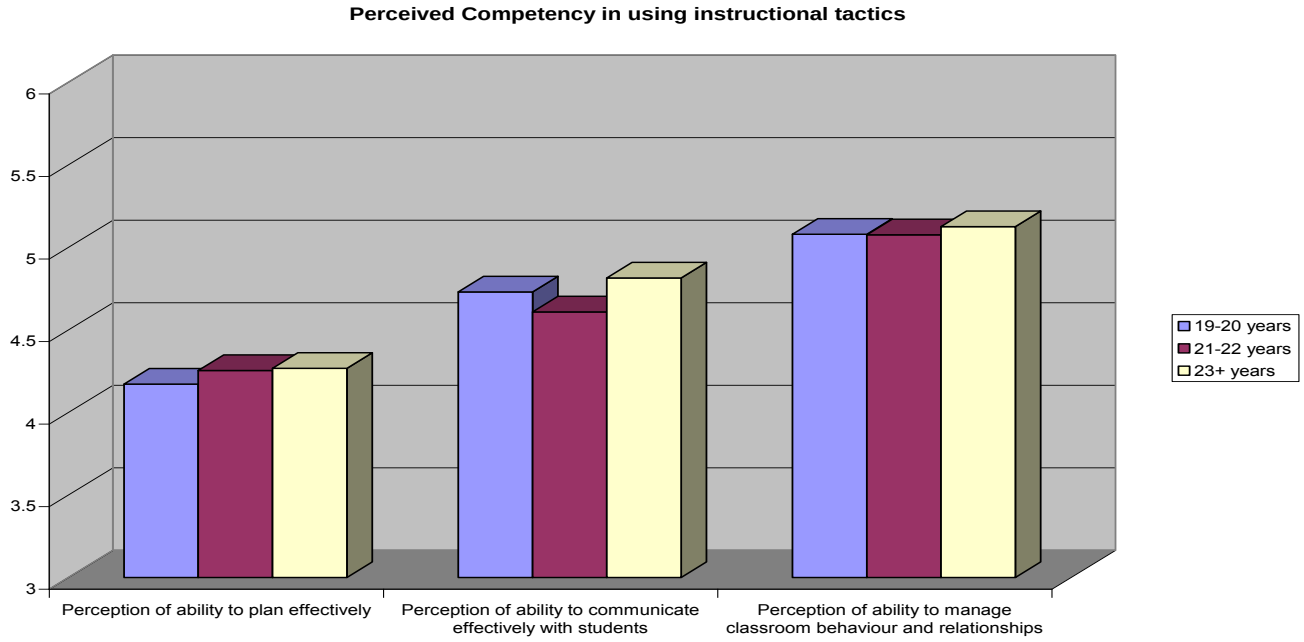
While there is no significant difference between males and females when considering the perceived competency in using the instructional tactics as outlined above, the females perceive themselves as distinctly more effective planners than males (Figure 4.3a).

Figure 4:3a Distributions of scores for perceived competency in using instructional tactics for males and females



Further, while there is no significant difference between the age groups (19-20 years, 21-22 years, 23+ years), when considering the perceived competency in using the instructional tactics as outlined above, the trend is for the older age groups to see themselves to be slightly more competent as shown in Figure 4.3b

Figure 4:3b Distributions of scores for perceived competency in using instructional tactics for different age groups



Instructional self-efficacy: English and Mathematics

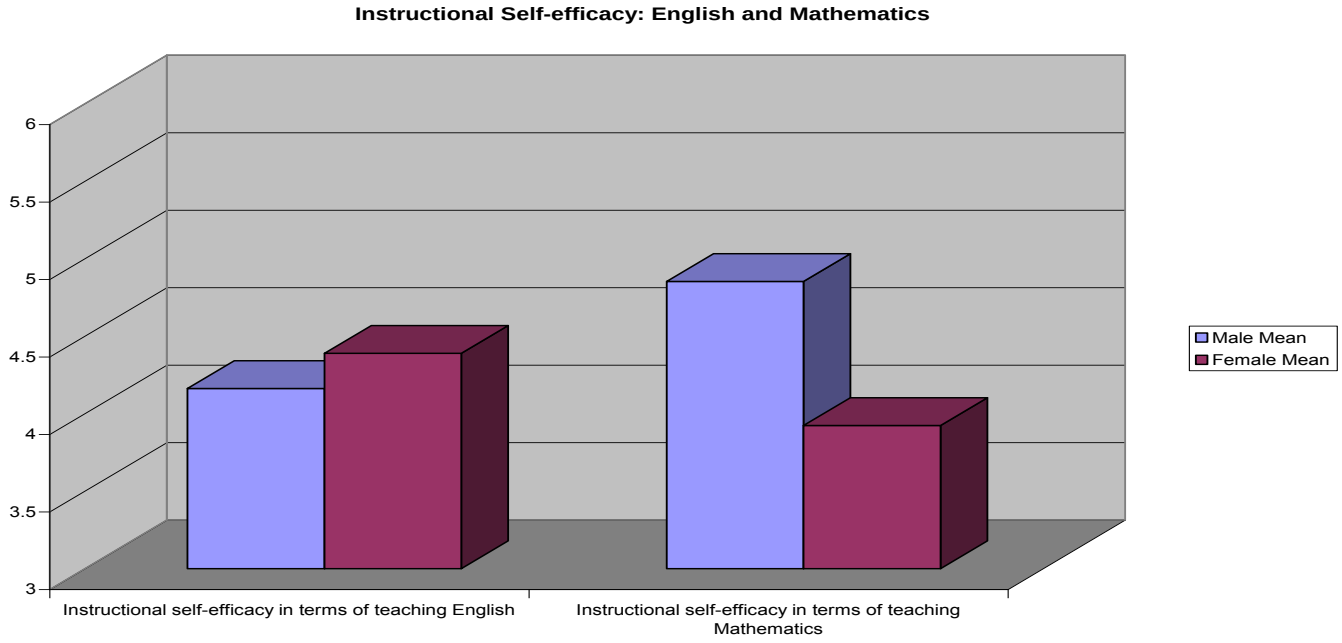
The means and standard deviations of the pre-service teachers‟ instructional self-efficacy in teaching English and Mathematics is shown in Table 4.3b below.

Table 4.3b Means and standard deviations for instructional self-efficacy in teaching English and Mathematics

Element	Mean	Standard Deviation
Instructional self-efficacy in terms of teaching Mathematics	4.1229	1.14527
Instructional self-efficacy in terms of teaching English	4.3408	.55584

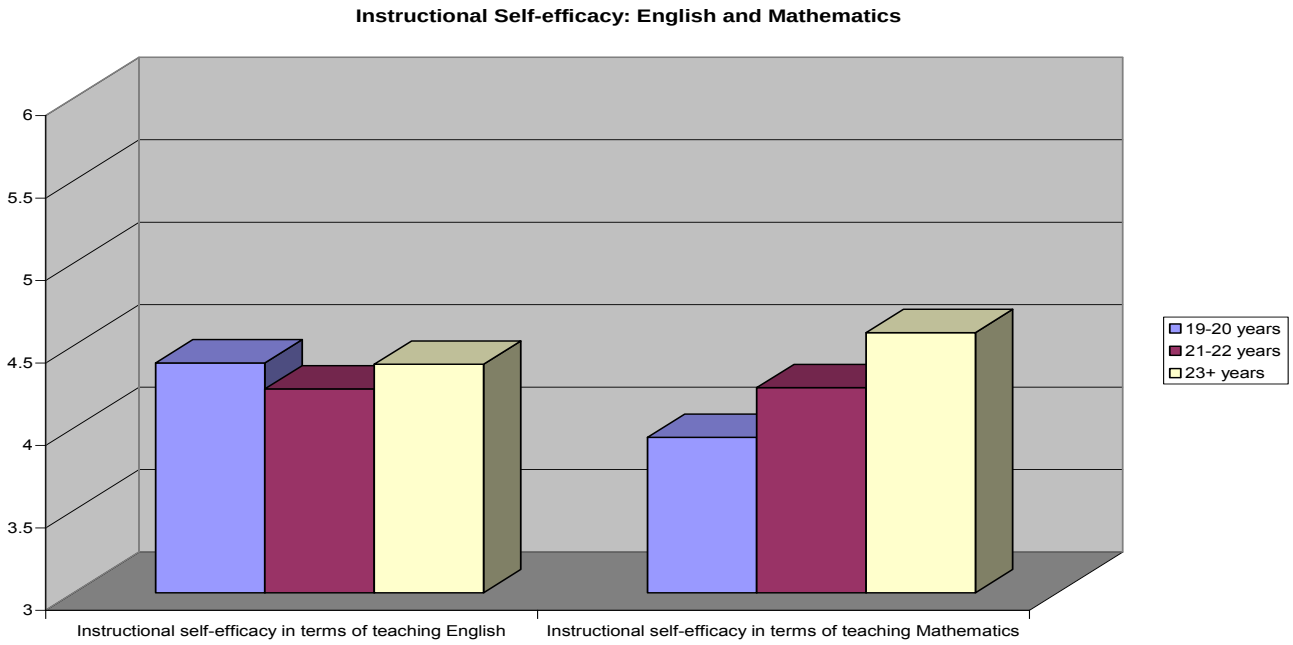
When considering the perceived competency in teaching English and Mathematics for males and females separately (Figure 4.4), we note that the males (mean = 4.8533) generally perceive themselves as more able to teach Mathematics than females (mean = 3.9236). This difference is significant at the 0.05 level. We note that the females perceive themselves as more able to teach English than the males, but this difference is not significant at the .05 level.

Figure 4.4 Distributions of scores for instructional self-efficacy in terms of teaching English and Mathematics for males and females



When considering the perceived competency in teaching English and Mathematics for the different age groups (Figure 4.5), we note that the more mature pre-service teachers (mean = 4.5778) generally perceive themselves as more able to teach Mathematics than the younger pre-service teachers (mean = 3.9421). This difference is significant at the 0.05 level. We also note that there is no difference between the various age groups in their perceptions of their ability to teach English.

Figure 4.5 Distributions of scores for instructional self-efficacy in terms of teaching English and Mathematics for different age groups



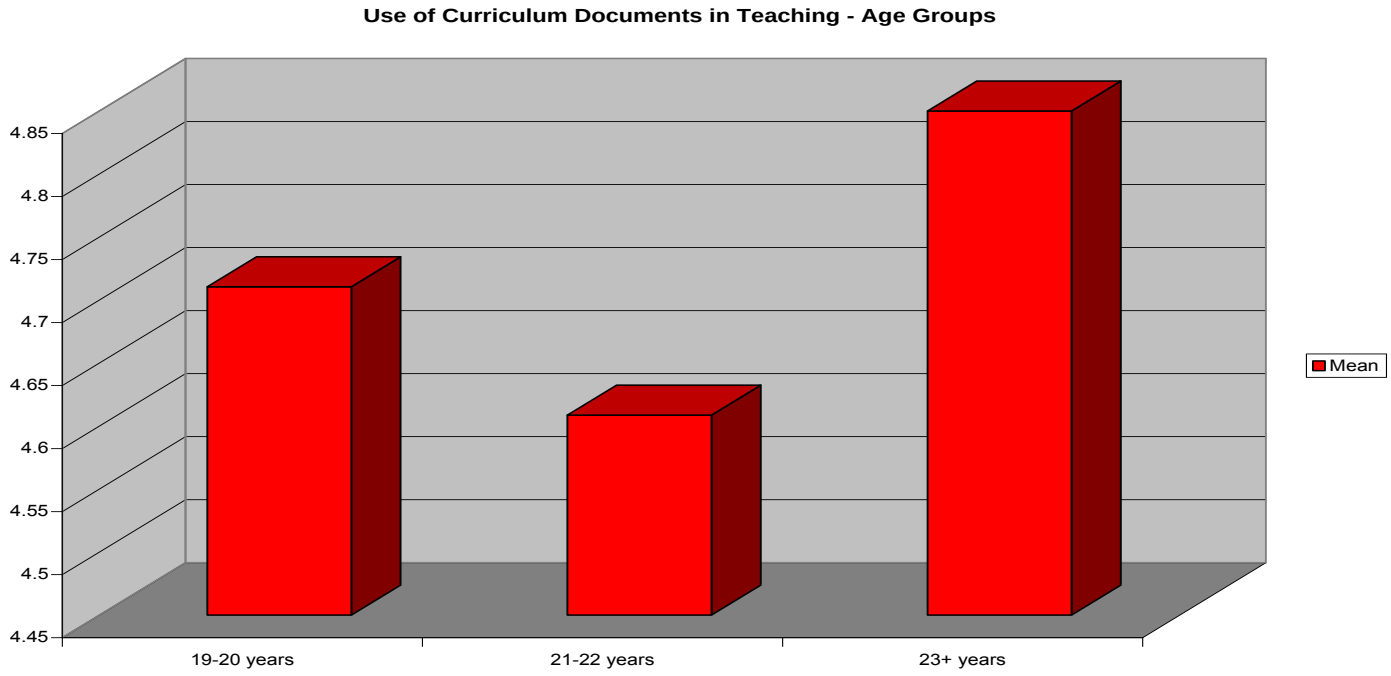
Use of Curriculum Documents in Teaching

The mean value for the use of Curriculum Documents in teaching was 4.6972, with a standard deviation of 0.8344.

It was noted that there was no significant difference when considering the use of Curriculum Documents between males and females, with the males having a mean of 4.6667 and the females having a mean of 4.7054.

While there is no significant difference when considering the use of Curriculum Documents between the age groups (19-20 years, 21-22 years, 23+ years), it is noted that the older age group use Curriculum Documents more frequently as seen in Figure 4.6.

Figure 4.6 Distribution of „use of curriculum documents in teaching" scores for different age groups

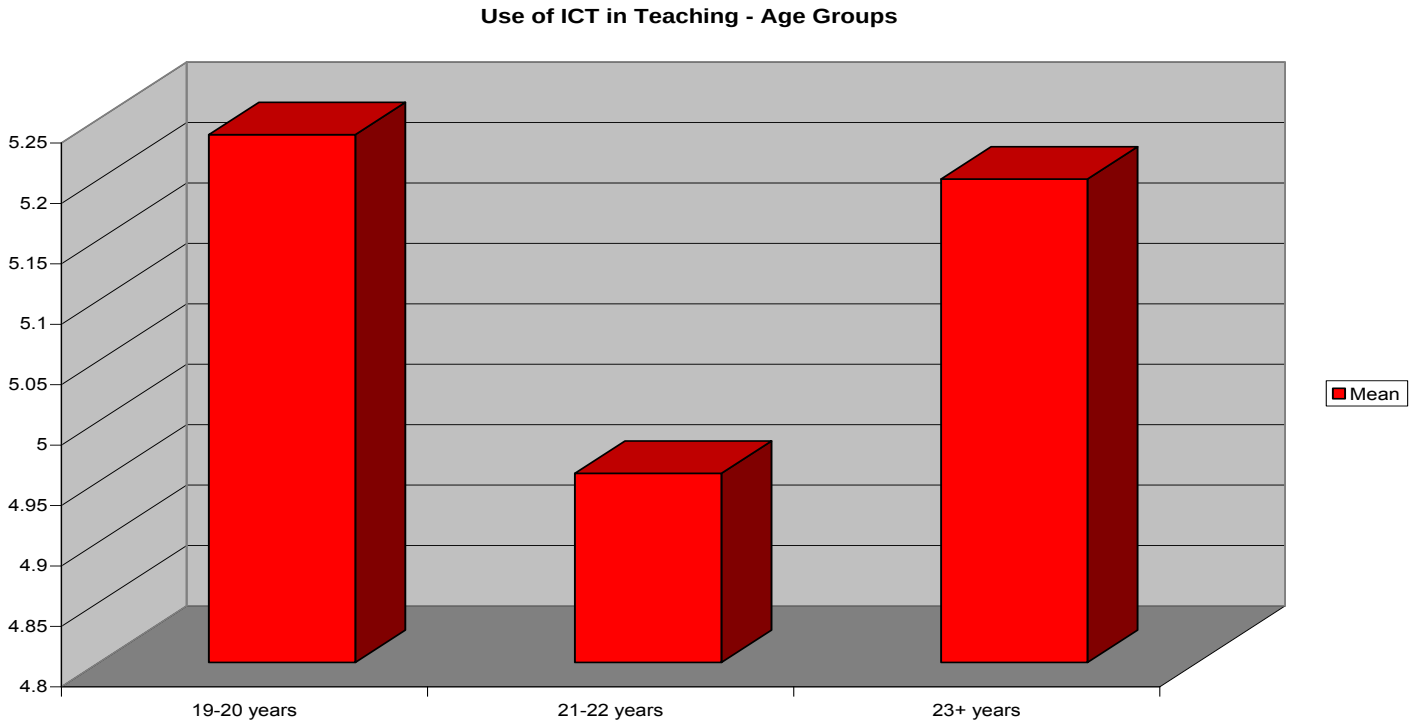


Use of Information and Communication Technology in Teaching

The mean value for the use of ICT in teaching was 5.1408, with a standard deviation of 0.7130. It was noted that there was no significant difference when considering the use of Curriculum Documents between males and females, with the males having a mean of 5.3667 and the females having a mean of 5.0804.

While there is also no significant difference when considering the use of ICT between the age groups (19-20 years, 21-22 years, 23+ years), it is noted that the younger age group use ICT more often as seen in Figure 4.7.

Figure 4.7 Distribution of „use of ICT in teaching" scores for different age groups



Regression analysis for predictors of instructional self-efficacy: An overview

To explore the potential relationships between a pre-service teacher"s instructional self-efficacy within the two of the mandatory areas of study (literacy and numeracy) and the other elements of teacher"s work, instructional tactics (planning, communication and management), academic performance and demographic factors regression analysis was carried out.

Predictors of instructional self-efficacy in numeracy

In terms of pre-service teachers" instructional self-efficacy in numeracy (dependent variable – Instructional self-efficacy in terms of teaching Mathematics) the first model for regression consisted of following set of independent variables: age group, gender of the student, perception of ability to plan effectively, perception of ability to manage classroom behaviour and relationships, perception of ability to communicate

effectively, use of ICT in the classroom, use of curriculum documents, elements of academic performance and I enjoy reading for my own pleasure. This first model accounted for 34.9% of the explained variance in instructional self-efficacy in numeracy.

However, backward regression of model one generated a three significant (at the 0.05 level) factor model (Table 4.4) which accounted for 24.1% of the explained variance in instructional self-efficacy in numeracy.

Table 4.4 Regression analysis for predictors of instructional self-efficacy in teaching numeracy

Independent variables	R Square	Beta	t	Sig
	0.241			
Perception of ability to manage classroom behaviour and relationships		+0.239	+2.2274	0.029
Gender of student		-0.312	-2.898	0.005
Academic performance question: I enjoy the assessment tasks I am given In PP370		-0.282	-2.617	0.011

The strongest predictor of instructional self-efficacy in terms of teaching Mathematics were gender of student (p=-005), followed by "I enjoy the assessment tasks I am given in PP370" and the "perception of ability to manage classroom behaviours and relationships."

The negative beta for the independent variable „gender of student" indicates that male pre-service teachers were significantly more confident in teaching mathematics than the female group. Further, this data indicates the more the students enjoyed the PP370 assessment tasks the less confident they were in teaching mathematics.

Predictors of instructional self-efficacy in teaching literacy

In terms of pre-service teachers instructional self-efficacy in literacy (dependent variable – perception of ability to teach English) the first model for regression consisted of following set of independent variables: age group, gender of the student,

perception of ability to plan effectively, perception of ability to manage classroom behaviour and relationships, perception of ability to communicate effectively, use of ICT in the classroom, use of curriculum documents, elements of academic performance and I enjoy reading for my own pleasure. This first model accounted for 50.2% of the explained variance in instructional self-efficacy in literacy.

However, backward regression of model 1 generated a four significant (at the 0.05 level) factor model (Table 4.5) which accounted for 47.0% of the explained variance in instructional self-efficacy in literacy.

Table 4.5 Regression analysis for predictors of instructional self-efficacy in literacy

Independent variables	R Square	Beta	t	Sig
	0.470			
Perception of ability to manage classroom behaviour and relationships		+0.394	+4.318	0.000
I enjoy reading for my own pleasure		+0.295	+3.219	0.002
Academic performance question: I enjoy the assessment tasks I am given In PP370		+0.296	+3.220	0.002
Academic performance question: I use my time efficiently when preparing assignments		+0.340	+3.713	0.000

The strongest predictors of instructional self-efficacy in literacy were pre-service teachers‟ perception of ability to manage classroom behaviour and relationships and the extent to which they perceived that they used their time efficiently when preparing assignments ($p < 0.001$) followed by the extent to which they enjoyed reading and enjoyed the PP370 assessment tasks. ($p=0.002$)

Regression analysis for predictors of instructional self-efficacy within Teaching Standards Element 3: Planning

To explore the potential relationships between pre-service teachers‟ instructional self-efficacy within the two of the proposed mandatory areas of study (literacy & numeracy) and use of various planning strategies (time spent planning, adherence to

lesson plans - reverse, detailed planning - reverse, research for lessons, adherence to lesson plans, deviation from lesson planning, detailed planning) regression analysis was carried out.

Predictors of instructional self-efficacy in numeracy

In terms of pre-service teachers‟ instructional self-efficacy in numeracy (dependent variable – perception of ability to teach mathematics) the first model for regression consisted of the following set of independent variables: time spent planning, adherence to lesson plans - reverse, detailed planning - reverse, research for lessons, adherence to lesson plans, deviation from lesson planning, detailed planning. This first model accounted for 7.0% of the explained variance in instructional self-efficacy in numeracy. However, backward regression of model 1 did not generate a model that had significant factors (See Table 4.6)

Table 4.6 Regression analysis for predictors of instructional self-efficacy in numeracy: planning

Independent variables	R Square	Beta	t	Sig
	.085			
Constant		na	29.669	.000

It appears that the pre-service teachers perceive that all the various components of planning had little impact on their self-efficacy in terms of teaching Mathematics.

Predictors of instructional self-efficacy in literacy

In terms of pre-service teachers instructional self-efficacy in literacy (dependent variable – perception of ability to teach English) the first model for regression consisted of following set of independent variables: time spent planning, adherence to lesson plans - reverse, detailed planning - reverse, research for lessons, adherence to lesson plans, deviation from lesson planning, detailed planning. This first model accounted for 25.5% of the explained variance in instructional self-efficacy in literacy.

However, backward regression of model 1 generated a one significant (at the 0.05 level) factor model (Table 4.7) which accounted for 9% of the explained variance in instructional self-efficacy in literacy.

Table 4.7 Regression analysis for predictors of instructional self-efficacy in literacy: planning

Independent variables	R Square	Beta	t	Sig
	0.090			
I enjoy seeking out information for use in lesson plans		+0.299	+2.569	0.012

The single predictor of instructional self-efficacy in teaching English was „I enjoy seeking out information for use in lesson plans." (p=0.012).

Regression analysis for predictors of instructional self-efficacy within Teaching Standards Element 4: Communication

To explore the potential relationships between pre-service teachers" instructional self-efficacy within the two of the mandatory areas of study (literacy & numeracy) and use of various communication strategies (leading discussion, questioning, use of resources, linking new knowledge to prior learning, variety of tactics, modelling exemplary language, making learning purposeful) regression analysis was carried out.

Predictors of instructional self-efficacy in numeracy

In terms of pre-service teachers" instructional self-efficacy in numeracy (dependent variable – perception of ability to teach Mathematics) the first model for regression consisted of following set of independent variables: perception of ability to lead discussions, perception of ability to question effectively use of resources, perception of ability to link new knowledge with prior learning, use of exemplary language, and perceptions of ability to make learning purposeful. This first model accounted for 14.0% of the explained variance in instructional self-efficacy in numeracy.

However, backward regression of model 1 generated a one significant (at the 0.05 level) factor model (Table 4.8) which accounted for 8.5% of the explained variance in instructional self-efficacy in numeracy.

Table 4.8 Regression analysis for predictors of instructional self-efficacy in numeracy: communication

Independent variables	R Square	Beta	t	Sig
	.085			
Perception of ability to use questioning effectively		+0.292	+2.519	.014

The only significant predictor of pre-service teachers‟ perceptions of their ability to teach Mathematics was their perception of ability to use questioning effectively (p=0.014).

Predictors of instructional self-efficacy in literacy

In terms of pre-service teachers instructional self-efficacy in literacy (dependent variable – perception of ability to teach English) the first model for regression consisted of following set of independent variables: perception of ability to lead discussions, perception of ability to question effectively use of resources, perception of ability to link new knowledge with prior learning, use of exemplary language, and perceptions of ability to make learning purposeful. This first model accounted for 31.0% of the explained variance in instructional self-efficacy in literacy.

However, backward regression of model 1 generated a four significant (at the 0.05 level) factor model (Table 4.9) which accounted for 29.4% of the explained variance in instructional self-efficacy in literacy.

Table 4.9 Regression analysis for predictors of instructional self-efficacy in literacy: Communication

Independent variables	R Square	Beta	t	Sig
	0.294			
Perception of ability to lead discussions effectively		+0.273	+2.490	0.015
Perception of ability to support teaching with a wide variety of resources		+0.272	+2.212	0.031
Perception of ability to vary communication strategies		-0.255	-2.091	0.040
Perception of ability to model exemplary language		+0.320	+2.884	0.005

The strongest predictors of instructional self-efficacy in literacy were the extent to which pre-service teachers perceived they modelled exemplary language (p=0.005), their perception of their ability to lead discussions effectively (p=0.015) and the extent to which they perceived that they supported their teaching with a wide variety of resources (p = 0.031) followed by their perceptions of their ability to vary teaching tactics (communication strategies) (p=0.040). The negative beta for the independent variable „varies teaching tactics" indicates that students who used a variety of teaching tactics did not perceive themselves as confident in teaching English.

Regression analysis for predictors of instructional self-efficacy within Teaching Standards Element 5: Management

To explore the potential relationships between pre-service teachers" instructional self-efficacy within the two of the proposed mandatory areas of study (literacy & numeracy) and use of various management strategies (positive class ethos, rapport, maintain pupil interest, use of non-verbal communication, positive relationships, sense of „control", positive student response, awareness of behaviour) regression analysis was carried out.

Predictors of instructional self-efficacy in numeracy

In terms of pre-service teachers" instructional self-efficacy in numeracy (dependent variable – perception of ability to teach Mathematics) the first model for regression

consisted of the following set of independent variables: positive class ethos, rapport, maintain pupil interest, use of non-verbal communication, positive relationships, sense of „control", positive student response, awareness of behaviour. This first model accounted for 18.0% of the explained variance in instructional self-efficacy in numeracy.

However, backward regression of model 1 generated a one significant (at the 0.05 level) factor model (Table 4.10) which accounted for 15.6% of the explained variance in instructional self-efficacy in numeracy.

Table 4.10 Regression analysis for predictors of instructional self-efficacy in numeracy: management

Independent variables	R Square	Beta	t	Sig
	.156			
I am aware of student behaviour when teaching		+0.359	+3.549	.001

The only significant predictor of pre-service teachers" perceptions of their ability to teach Mathematics was their perception of ability to use questioning effectively (p=0.014).

Predictors of instructional self-efficacy in literacy

In terms of pre-service teachers instructional self-efficacy in literacy (dependent variable – perception of ability to teach English) the first model for regression consisted of the following set of independent variables: positive class ethos, rapport, maintain pupil interest, use of non-verbal communication, positive relationships, sense of „control", positive student response, awareness of behaviour. This first model accounted for 25.5% of the explained variance in instructional self-efficacy in literacy.

However, backward regression of model 1 generated a two significant (at the 0.05 level) factor model (Table 4.11) which accounted for 24.5% of the explained variance in instructional self-efficacy in literacy.

Table 4.11 Regression analysis for predictors of instructional self-efficacy in literacy: management

Independent variables	R Square	Beta	t	Sig
	0.245			
Perception of ability to maintain student interest when teaching		+0.287	+2.592	0.012
Perception that students respond positively to requests		+0.331	+2.990	0.004

The strongest predictors of instructional self-efficacy in literacy were the extent to which pre-service teachers perceived that students responded positively to their requests (p=0.004), and their perception of their ability to maintain students interest when teaching (p=0.012).

CONCLUSION

The qualitative research instrument yielded data that were descriptive of the strategies that pre-service teachers perceived increased their instructional self-efficacy, while the quantitative research instrument provided comparative data relating perceptions of elements of instructional self-efficacy in terms of teaching English and Mathematics and the relationships between teaching in these fields and the importance of planning, communication and management of student behaviour. These factors were also analysed in terms of the pre-service teachers‟ age, gender and their perceptions of academic performance. Further, the use of curriculum documents and ICT in teaching was explored. The following chapter will discuss the implications of the data and highlight the important findings.

CHAPTER FIVE

DISCUSSION OF DATA AND FINDINGS

INTRODUCTION

This chapter will discuss the findings of the focus groups and the questionnaire separately within the context of the literature review and then explore links between the qualitative and quantitative components of the project.

FOCUS GROUPS

Analysis of the focus group transcripts regarding an increase in self-efficacy in instructional tactics revealed four perceived significant common factors and several minor factors across the four focus groups. When each focus group was asked to rank the methodology for effectiveness in increasing instructional self-efficacy, some interesting patterns emerged.

The elements of the Bachelor of Education (Primary) courses perceived by pre-service teachers at the midway point of their course to increase instructional self-efficacy are as follows:

1. A ready-reference guide to instructional tactics that covers tactics learnt and practised during the semester;
2. The modelling of tactics in lectures with accompanying explanations;
3. Opportunities for both observing peers micro-teach instructional tactics and micro-teaching peers themselves. For maximum increases in self-efficacy, opportunity should be given for clarification, groups should be kept small (3-10 people), and some participants felt that teaching children rather than peers would help them gain confidence.
4. Observation of demonstration lessons and immediate debrief where pre-service teachers could direct questions to the demonstrating teacher preferably.

Other factors included the importance of variety and frequency in building confidence, strong content knowledge, especially in English and Mathematics and the opportunity to strengthen their planning.

The implications of these results will be discussed within the framework and the literature findings. The literature relating to self-efficacy identified five factors that result in increased self-efficacy: modelling (both vicarious and enactive), social encouragement, physiological state, goal setting and personality. Of these, personality is considered a factor over which the course providers have no control, although awareness of this factor is very important. The other four factors, however, can all to greater or lesser degree be influenced by how a particular course is structured, so the discussion of the findings will relate largely to these factors, and then progress to factors not indicated by the literature.

Modelling

Modelling emerged as a very strong factor for increasing self-efficacy in the literature so it was no surprise to find that all focus groups featured modelling in various forms as a significant factor for developing instructional self-efficacy. In all, four discrete types of modelling were discussed by the focus groups; lecturer modelling, peer modelling (micro-teaching), teacher modelling (demonstration lessons in a school environment) and video modelling. An additional type of modelling (self-modelling) was suggested by just one participant in a focus group, but was not discussed to any extent.

All four groups discussed the value of the lecturer modelling instructional tactics in class, with three out of four groups ranking it in first or second place.
This finding is consistent with the literature, especially the work of Bandura (1977, 1986, 1997) and Schunk (2004) in relation to the importance of vicarious modelling in learning. The research of Bandura (1977), Schunk (2004) and Horner et al. (2008) identifies perceived similarity, perceived competence and perceived status as essential characteristics of the „modeller" if the transfer of skill is to occur. One can assume in

the case of the participating pre-service teachers that perceived similarity (both the lecturer and pre-service teachers are educators), perceived competence (pre-service teachers respect the lecturer‟s knowledge and ability to demonstrate the tactic) and perceived status (authority as lecturer of professional development subject), plus their own involvement in the class as „students‟ has immersed them in the instructional tactic, increasing their understanding of it. There was widespread agreement that modelling of instructional tactics by the lecturer in class was an important factor in improving instructional self-efficacy, although it was seen to improve understanding more than build confidence and needed follow-up activities for maximum benefit.

The literature (Bandura, 1977; Csikszentmihalyi, 1990; Horner et al., 2008; Schunk, 2004) also points out certain conditions that the observers (in this case, pre-service teachers) must meet for modelling to be effective. These are; paying attention, ability for retention, potential for replication (production), and motivation to exhibit the same behaviour. It is assumed that young adults undertaking the Bachelor of Education (Primary) course generally have chosen this course of study, and are capable of study at a tertiary level and therefore meet the first three of these criteria. Motivation to pay attention to instructional tactics is embedded in the course through professional experience sessions at the end of each semester where pre-service teachers are given opportunities to develop their skills further in the classroom. Using the tactics during these placements is included in the professional experience assignment and forms part of the assessment for this subject.

The second type of modelling that featured in the focus groups was peer modelling, or micro-teaching which offers opportunities for both vicarious and enactive modelling depending on whether the pre-service teacher takes on the role of „teacher‟ or „student‟. In terms of time spent in discussion, this aspect of the course demanded the greatest attention, as the pre-service teachers explored their attitudes to, and perceived benefits from peer taught micro-lessons. Focus Groups One, Two and Four ranked this activity in the top three strategies for improving instructional self-efficacy. Focus Group Three split peer teaching into three separate points (small group sizes, use children rather than peers and more discussion /peer evaluation), and gave them a ranking of 4, 5, and 6.

All focus groups perceived that micro-teaching their peers increased their self-efficacy. This perception may be partially explained by Csikszentmihalyi‟s (1990) *flow* theory which explores the optimum balance of challenge and skill, anxiety and boredom to produce a state which is conducive to learning. While this is beneficial for the pre-service teaching involved in the teaching process, there are also benefits for the peers observing.

Research by Schunk (2004) indicates that peer modelling, if done by competent classmates, results in higher self-efficacy and cognitive competencies than when those same activities are modelled by the teacher. Therefore, it would be expected that micro-teaching would rank as significant, which it did. It did not, however, rank higher than modelling by the lecturer, suggesting that perceived competence and salience were not as high when observing peers as when observing the lecturer. Another possible reason could be that students saw a whole spectrum of peer-modelled micro-lessons from weak to outstanding and conjectured they could not totally rely on peer modelled behaviour as they could on lecturer modelled behaviour.

One area of discussion that is significant focused on substantive communication about what was happening in micro-lessons. Pre-service teachers identified the importance of sustained conversation about the theory and practice of instructional tactics. Closely related to this, was receiving constructive and immediate feedback. Comments such as, “Sometimes we are too rushed. I‟d like to discuss what happened a bit more but we run out of time,” “Sometimes I have a question, but by the end, I‟ve forgotten it,” and “I would like to ask questions like….what is happening? I need the feedback right then and there,” indicated the importance to the pre-service teachers of being able to seek clarification and ask questions during the sessions. Another pre-service teacher said “I would like feedback when I am doing my lesson…. It‟s a good idea because sometimes you go through a whole lesson and don‟t know you‟re screwing it up.” These comments implied the importance of allowing time for pre-service teachers to interact and ask questions, a finding that is in keeping with research by Schunk (2004) who discovered that opportunities for questioning, explanation and discussion raise the probability of success in future attempts at the task, thereby leading to mastery experiences and improved self-efficacy.

The role of substantive communication in increasing self-efficacy was also a significant factor in the third type of modelling: modelling of a given instructional tactic in a demonstration lesson by an experienced teacher in a primary classroom. Demonstration lessons were perceived by three focus groups to raise their instructional self-efficacy, but were given a ranking of four by Focus Group Four and a ranking of five by Focus Groups One and Two. The comments acknowledged the benefits of demonstration lessons but also suggested limitations as follows:

- Limited or no opportunity during a demonstration lesson to explain or clarify steps or actions, whereas this is possible in a lecture. This further strengthens the case for allowing substantive communication to occur either during the modelling or immediately after it. The following point complements this view.
- Demonstration lessons are over in half an hour with no immediate follow up, except what is offered in lectures. By this time, pre-service teachers have lost the initial urge to ask questions and seek clarification.
- Pre-service teachers have no connection with the teacher, and therefore their attention to the modelling process may not be intentional (Horner et. al., 2008; Kandel, 2006).
- For those in the classroom, the environment may serve as a distraction, and for those watching the live video link, there are sometimes the added distractions of poor picture or sound and the narrow view offered by a camera.

There were, however, some benefits that emerged from watching demonstration lessons on live video feed, and these, once again, related to substantive communication as the following comment indicates. “If you‟re watching it (demonstration lesson by live video feed) and (the lecturer) makes comments, it‟s good.” The evidence for allowing substantive communication about instructional tactics as they are modelled is strong, and leads on to the fourth type of modelling discussed.

Video modelling in lectures, as distinct from live feed video lessons was discussed by Focus Group Three, who alone excluded demonstration lessons on their list of items that helped increase instructional self-efficacy, and ranked lecturer modelling at seventh position, quite low on their list. This group felt that demonstration lessons were "a waste of time," although this was moderated by the comment, "no, not completely…sometimes it's good." This group had an alternative to demonstration lessons which still supported the idea of modelling and also allowed for substantive communication about the tactics being modelled. Their suggestion was to video a variety of teachers demonstrating the instructional tactics, and screen them during class time. This, they argued, would eliminate both the need for demonstration lessons and lecturer modelling of the tactics. Furthermore, they asserted, using videos would enable pausing for discussion, replay for clarification and opportunities for questioning without a time lapse. It was interesting to note that in relation to each type of modelling the pre-service teachers identified substantive communication about instructional tactics as an important factor in raising their instructional self-efficacy.

Only one pre-service teacher raised the possible tactic of self-modelling with the question, "Would there be a benefit in getting your own lesson video-recorded so you could watch yourself teach?" Although this idea was not popular with other participants, it is supported by Schunk (2004), who asserts that "the highest degree of model-observer similarity occurs when one is one's own model." This alone would validate its inclusion as a strategy to improve self-efficacy in instructional tactics, providing it was accompanied by reflection and opportunity for clarification.

As well as establishing the importance of substantive communication during modelling activities, an additional factor for increasing self-efficacy in instructional tactics emerged from the focus groups. This related to the frequency and variety of modelled activities. Comments such as, "the more times you're exposed to something, the more confident you become," "When it (a tactic) is repeated it's good. I don't always get it the first time, and "The more I see it, the easier it becomes," indicated that while each modelling experience by itself was valuable, it was the frequency of the modelling and the variety of modelled activities that really impacted on the confidence of pre-service teachers to replicate the instructional tactics. This supports the findings of Zimmerman and Schunk (2003) that multiple models are

more effective than a single model in raising self-efficacy. One participant asserted, "We have to repeat it more ways than one." The comments relating to variety and frequency were sufficient to suggest that a series of modelled activities such as the sequence derived from the literature (See Figure 2.2) has merit when structuring a program to build instructional self-efficacy.

Social encouragement and physiological state

Most of the discussion in the focus groups centred on various modelling experiences, and lack of discussion relating to social encouragement and physiological states suggests that the participating pre-service teachers were generally comfortable with the learning environment, and social encouragement was already being addressed. For the pre-service teachers, the modelling activity that resulted in the most stress was micro-teaching a lesson for one"s peers, and a degree of anxiety was revealed by one of the participants. The comment, "I make mistakes," (when teaching a micro-lesson) was followed by the rejoinder, "It"s better to make them now than in the classroom." Laughter and agreement ensued.

One pre-service teacher suggested "I"d like to practice on a small group of children," and another responded, "It would be easier…but I don"t think it would give me more confidence." Generally, pre-service teachers were happy with the group sizes although one group suggested 3-5 people as the optimal size for micro-teaching. This is considerably smaller than current group sizes, leading to the assumption that some pre-service teachers find micro-teaching quite daunting.

The researcher, however, when observing pre-service teachers engaged in teaching micro-lessons, has often observed some indicators of mild physiological stress. These include pitch of voice rising, rapid speech and fixedness on task, which all indicate a certain degree of anxiousness and nervousness. Generally, these symptoms lessen or disappear completely as the participants settle into their tutorial groups.

Both the comments and observations would suggest that the social situation does impact on learning as indicated by the literature, particularly by Csikszentmihalyi (1997) who cites self-consciousness as a roadblock to achieving „optimal flow". However, the esteem in which pre-service teachers held micro-teaching as a tool to

build their instructional self-efficacy appeared to outweigh any minor anxiety and also implies that they feel supported by their peers, and are receiving social encouragement when engaged in micro-teaching activities.

Instructional tactics booklet

Although results from the focus groups were predictable in some areas, they were surprising in others. The emergence of an instructional tactic booklet as the top factor for improving instructional self-efficacy was unexpected, but ties in closely with their comments about the frequency and variety of how they were taught instructional tactics. The pre-service teachers had used one such booklet on their previous professional experience session in schools and there was a consensus of opinion that a booklet served as a reminder of what to do and how to do it when they were in the classroom.

Although pre-service teachers all had access to lecture notes, demonstration lesson plans, their own reflections and marking criteria for micro-lessons, these were not perceived to be as effective as a summary of the modelled tactics for building instructional self-efficacy. The inclusion of an instructional tactics booklet (or similar prompt) did not surface in the literature, and appears to have particular relevance to the self-efficacy of pre-service teachers who know they will be showcasing their instructional skills in the workplace some weeks after learning the teaching tactics.

There is another possible reason for the top ranking of an instructional tactics booklet. Most pre-service teachers, when entering a new classroom environment in which they are expected to demonstrate their skills, admit to some level of nervousness and anxiety (physiological stress manifest as voice pitch and speed altering, blushing, fixedness on task). In this case, a succinct booklet could be used at the very least, as a prompt, and at the most as a crutch to reduces stress, and build confidence. Having this information at hand may assist pre-service teachers psychologically by replacing, to a certain extent, the social support network of peers which is absent in the classroom. It should be noted, at this point, that all instructional tactics covered in the course are listed and defined in the Professional Experience Handbook which pre-

service teachers use for their practical sessions in schools, so further clarification may be needed as to why the concept of an instructional tactics booklet was so popular.

Although the instructional tactics booklets emerged as the top factor in building instructional self-efficacy, the pre-service teachers were fully aware that a booklet, without the benefit of a range of lectures, demonstrations, and micro-teaching activities would not be as effective. Comments from two groups highlighted the limitations of the booklet. "The booklet"s no good if we haven"t seen the tactic. I didn"t even know what some of the tactics on our list were." This was followed by general agreement of the group, and "The booklet….yeah….with pictures was useful." This was followed by the comment, "It"s no good getting a booklet without doing all the other things though" (lectures, micro-teaching, and demonstration lessons). In fact, a high proportion of the positive comments relating to an instructional tactics booklet also linked the booklet to other learning experiences, as in this statement, "We forget exactly how some things, for example, how cooperative learning structures work, and having a booklet with the pictures gives us confidence to try them." This was the gist of most of the „booklet" comments although Focus Group One placed high importance on the contribution of planning to their confidence levels, and wanted to create a bank of lesson plans incorporating a variety of instructional tactics at all stages of the primary school curriculum which could be circulated to all pre-service teachers in booklet form.

With the exception of the tactic booklet, the top four factors all related to modelling of instructional tactics. As one student said, "For me, it"s more hands on when I actually have to do it," followed by "You know how when you learn something, you understand it, but when you do it, it makes it much better."

Goal setting

Goal setting did not feature at all in discussion by any of the focus groups. There are at least three possible explanations for this.

1. The pre-service teachers do not perceive that setting goals in the area of instructional tactics is viable; or

2. The pre-service teachers have not learnt to assess their competence with instructional tactics in terms of whether the outcome/outcome indicators were met for micro-lessons; or
3. The exposure to goal setting at this stage of the course has been incidental rather than intentional, and loosely structured in terms of their professional experience.

SURVEY

Analysis of the data extracted from the survey questionnaires is discussed within the framework of the literature findings. This data included teachers‟ perceptions of their own academic performance, their use of ICT, their use of curriculum documents, and their instructional self-efficacy in terms of teaching English and Mathematics. Also included was data relating to the teachers‟ perception of their ability to carry out the following instructional tactics: planning, communicating and managing classroom behaviour. The analysis included an exploration of the relationships between instructional self-efficacy in teaching English and Mathematics and their perceived competency in the following elements of planning, communication and management as defined by the NSW Institute of Teachers (2006).

Academic Performance

The data revealed that most of the pre-service teachers were relatively confident in their academic ability. This may or may not be an accurate reflection of their actual academic ability but may reflect their perception of their performance in practical tasks, as the cohort also generally preferred practical assessment tasks to writing essays. This could reflect either a more positive attitude to practical assessments which they perceive as more relevant to teaching, or it could reflect poorer performance on essays.

The fact that pre-service teachers taking the subject PP370 generally perceived that the assessment tasks were relevant to the course affirms the subject structure. There was a slight gender difference regarding the use of time efficiently when preparing assignments. Although females scored themselves as being slightly more efficient than the males scored themselves in completing assignments, this could, in reality, be

an acknowledgement from males that they do assessment tasks at the last minute and may not spend as long on tasks as the females. This may not be related to efficiency, but rather the amount of time spent on assessments.

Use of ICT and curriculum documents for planning

The pre-service teachers reported an extensive use of curriculum documents in lesson delivery (mean of 4.697) and a very extensive use of ICT (mean of 5.148) in their teaching.

When age scores for use of ICT and curriculum documents for planning were analysed, two interesting trends were observed. Firstly, the older pre-service teachers tend to make more use of curriculum documents in their teaching, and second, younger pre-service teachers tend to be more confident in using ICT in their teaching.

There are at least three possible explanations for this. The mature pre-service teachers may be more focused on their study. They may have given up a job in the workforce or be juggling family roles in order to achieve their goals, and therefore be determined to use everything they can to help them achieve. A second possible explanation may stem from confidence levels. Mature-age students may be returning to study after a gap and therefore are uncertain about processes and structure, whereas students gaining entry into the Bachelor of Education (Primary) degree program straight from school are more confident with their ability to cope and therefore less reliant on curriculum documents. A third possible explanation is linked to the trend that younger pre-service teachers are generally more confident in using ICT in their teaching. This confidence in using ICT in teaching also insinuates that younger pre-service teachers may be more confident in using ICT for their planning, and so may not feel as reliant on curriculum documents, as they source a wide variety of ideas to supplement their planning. It stands to reason that younger pre-service teachers will be more confident ICT users both in their planning and in their teaching, as they have had more exposure to ICT during their education and qualify as „digital natives" while more mature students may be „digital immigrants".

Instructional self-efficacy: Teaching English and Mathematics

The pre-service teachers‟, when considered as a whole, rated their instructional self-efficacy in teaching English (mean of 4.340) higher than their instructional self-efficacy in terms of teaching Mathematics (mean of 4.122).

When gender scores were analysed, it was noted that males scored significantly higher in their perceptions of their ability to teach Mathematics than females. This is a traditional perception which holds true for this cohort as it is characterised by a small group of males who generally perceive themselves to be confident mathematicians. Despite this gender perception difference in Mathematics, there was little difference between males and females in their perceptions of their ability to teach English. This could be partially explained by the ratio of males to females in the class.

Use of instructional tactics

Pre-service teachers perceived their ability to manage classroom behaviour as much higher (mean of 5.085) than their ability to communicate effectively (mean of 4.702) with students and plan effectively (mean of 4.211). These ratings all indicate that this cohort of pre-service teachers feel very confident in using a variety of tactics relating to Teaching Standards Element 5 (positive class ethos, rapport, maintain pupil interest, use of non-verbal communication, positive relationships, sense of „control‟, positive student response, awareness of behaviour). The significantly high rating of managing classroom behaviour by the pre-service teachers could well reflect the course structure which includes a behaviour management module in all Professional Development classes – one per semester – at all year levels. The relatively low planning rating, however, may suggest that pre-service teachers perceive that they are still developing their planning skills at this point in their course. In particular, they have considerable experience in planning and executing individual lessons, but limited experiences in planning learning sequences that cover extended periods of time. As noted by McEwan (2002), it is this ability to plan for learning over an extended period of time that characterises an effective teacher.

Relationships between instructional self-efficacy and use of instructional tactics

The data revealed a strong correlation between perception of ability to manage classroom behaviour and perception of instructional self-efficacy. This was true for both teaching English and Mathematics. This perception indicates that pre-service teachers recognise that well-managed classrooms are essential to enhance teaching: a perception that is backed up by the literature which indicates that effective classroom management is essential for effective instruction and that instructional self-efficacy may impact one"s beliefs about one"s ability to manage behaviour (Henson, 2001).

This belief in an instructional self-efficacy/management nexus may also grow out of prior classroom experiences, and supports the case for strong links between schools and universities as recommended by The Ramsey Report (2000, p.60). The relatively low percentage of variance in instructional self-efficacy for the regression models outlined in Chapter 4, however, indicates that instructional self-efficacy is a function of many more components than just the classroom management tactic. This needs further exploration.

In considering the pre-service teachers" perceived competency in planning, communication, and classroom management separately, we note that different components of each were significant in the pre-service teachers" instructional self-efficacy in teaching English and Mathematics. In terms of the communication domain and teaching English, there was a high correlation between the pre-service teachers" perceptions of their ability to teach English and to lead discussions effectively, support their teaching with a wide variety of resources, vary their communication strategies and model exemplary language. In contrast, the pre-service teachers" perceptions of their ability to teach Mathematics was correlated with their perception of their ability to use questioning effectively.

In terms of the planning domain and teaching English, there was a high correlation between the pre-service teachers" perceptions of their ability to teach English and their enjoyment in seeking out resources to assist them in their teaching. In contrast,

the pre-service teachers‟ perceptions of their ability to teach Mathematics was not correlated with any of the components within the planning domain.

In terms of the management domain and teaching English, there was a high correlation between the pre-service teachers‟ perceptions of their ability to teach English and to maintain student interest and also through students responding positively to their requests. In contrast, the pre-service teachers‟ perceptions of their ability to teach Mathematics were correlated with their perception of their awareness of student behaviour when teaching.

The data reinforces the idea that different Key Learning Areas demand an emphasis on a different set of instructional tactics and that pre-service teachers need to be exposed to a range of tactics which they can access in different contexts. This parallels the literature and supports Element 1 of the NSW Graduate Professional Teaching Standards: Teachers know their content and how to teach that content to their students (NSW Institute of Teacher, 2006). It also suggests that instructional tactics should be intentionally taught not only in professional development subjects, but also in curriculum studies subjects.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

INTRODUCTION

This study has investigated pre-service teachers‟ perceptions of elements in their course which increase their instructional self-efficacy. It has also explored levels of instructional self-efficacy in the areas of content, planning, communication and classroom management and explored the relationships between pre-service teachers‟ perceptions of their ability to teach numeracy and literacy with specific tactics in the above areas. Previous chapters have provided a framework for the study, a theoretical basis, a description of the research instruments, and an analysis of the data. This chapter presents a summary and conclusion of this thesis by providing an overview of the findings and answering the research questions. Limitations of the study are considered and recommendations for further research included.

RESPONSE TO RESEARCH QUESTIONS

Having analysed both the qualitative and quantitative data, and considering the results within the framework of the literature, this chapter will now address the research question proposed in chapter 1.

1. *What elements of the Bachelor of Education (Primary) courses are perceived by pre-service teachers at the midway point of their course to increase instructional self-efficacy?*

This research project consolidated the links between instructional self-efficacy and modelling as outlined by previous research (Bandura, 1977; Csikszentmihalyi, 1990; Horner et al., 2008; Schunk, 2004). The pre-service teachers perceived that both vicarious and enactive modelling – lecturer modelling of tactics, demonstration lessons, microteaching of peers – accompanied by opportunities for discussion and

clarification presented the strongest case for building instructional self-efficacy. The need to learn and practise new instructional tactics in a safe social environment was supported by both the findings from the focus groups and the literature. The study was deliberate in not addressing the personality of pre-service teachers participating in the research and while the study failed to indicate whether goal setting could promote instructional self-efficacy in pre-service teachers as indicated by the literature, the importance placed by focus groups on a booklet-format summary of instructional tactics, suggests that this could strengthen pre-service teachers‟ instructional self-efficacy in transferring skills from the supportive social environment of a small tutorial group to the classroom, where physiological stressors could affect performance.

2. *What are the pre-service teachers' perceptions of themselves, as students in the subject PP370, and particularly in regards to four of the seven elements of the NSW Institute of Teachers Graduate Professional Teaching Standards (Content, Planning, Communication and Management)?*

Pre-service teachers‟ perceptions of themselves as students in the subject PP370 were relatively high, with a preference for practical assignments. Perceptions of ability to teach English and Mathematics were chosen to test the pre-service teachers‟ perceptions of their ability to teach content. For this cohort, the pre service teachers were confident in their ability to teach the content required in these Key Learning Areas, with their confidence in teaching English outranking their confidence in teaching Mathematics by a small margin. In relationship to planning, pre-service teachers reported an extensive use of curriculum documents in lesson planning and delivery and a very extensive use of ICT for planning and teaching, with the mature pre-service teachers tending to make greater use of curriculum documents and younger pre-service teachers demonstrating higher ICT use. The pre-service teachers indicated confidence in the areas of planning and communicating effectively, and perceived their ability to manage classroom behaviour as very high.

3. *What are the perceptions of pre-service teachers in terms of the relationships between their instructional self-efficacy in literacy and numeracy to academic achievement, planning, communication and classroom management?*

The data revealed a strong correlation between perception of ability to manage classroom behaviour and perception of instructional self-efficacy in both teaching English and Mathematics; however, different components of planning, communication and classroom management were significant in the pre-service teachers‟ instructional self-efficacy in teaching English and Mathematics. These relationships are outlined as follows.

Correlations were made between the pre-service teachers‟ perceptions of their ability to teach English and:

1. ability to lead discussion effectively, support teaching with a variety of resources, vary communication strategies, and model exemplary language in Element 4 (NSW Institute of Teachers) Teachers communicate effectively with their students;
2. enjoyment in seeking out resources in Element 3: Teachers plan, assess and report for effective learning; and
3. ability to maintain student interest and have students respond positively to requests in Element 5: Teachers create and maintain safe and challenging learning environments through the use of classroom management skills.

Correlations were made between the pre-service teachers‟ perceptions of their ability to teach Mathematics and;

1. ability to use questioning effectively in Element 4 (NSW Institute of Teachers) Teachers communicate effectively with their students;
2. no significant variable in Element 3: Teachers plan, assess and report for effective learning; and
3. perceptions of awareness of student behaviour in Element 5: Teachers create and maintain safe and challenging learning environments through the use of classroom management skills.

Overall, the results from the questionnaire reflect the Bachelor of Education course structure in which the pre-service teachers were enrolled. In this particular course the units are layered, enabling the development of a number of the Elements of the

Professional Teaching Standards concurrently. In addition, pedagogy is taught in conjunction with the content of the Key Learning Areas as endorsed by the Ramsey report (Ramsey, 2000), a practise which is validated by the questionnaire results.

LIMITATIONS

Due to the limitations of this study, the results need to be interpreted with caution. First, this study was limited to one degree course in a single tertiary institution, therefore results may not be valid for wider application, and would need to be tested with a larger sample representing a number of Universities.

A second limitation to the results relates to methodology. The current study limited its scope to the exploration of the sources of instructional self efficacy within a particular subject (PP271), and the relationships between instructional self-efficacy in selected elements of the NSW Graduate Professional Teaching Standards. Thus, it can present only a partial depiction of the factors that pre-service teachers perceive as contributing to their instructional self-efficacy. Thirdly, in the domain of Professional Practice: Element 3, only planning was considered, and not assessment and reporting. This means that the data for this element only applies to one aspect of the element. Finally, this study was limited by both the time available for the study and because it contained relatively small numbers of participants. There is some conjecture as to how far the generalisations of a small in-depth study can be carried into other similar instances, so application to a wider population would need to be treated with due caution.

RECOMMENDATIONS

Three major recommendations emerge from this study in relation to how Professional Development classes are currently structured, and possible directions for the future.

1. To continue with most of the present approaches to teaching professional development subjects in the Bachelor of Education (Primary) course. This includes using strategies that the pre-service teachers perceive increase their instructional self efficacy. Professional Development classes should demonstrate cutting-edge pedagogy as knowledge of how to teach and the ability to put it into practice will

largely determine the success of graduating teachers. The findings from this research indicate that both vicarious and enactive modelling, accompanied by opportunities for substantive communication in a variety of settings and structures should be a strong component of the professional development subjects.

2. The current practice of including instructional tactics throughout the semester and following up with professional experience where pre-service teachers intentionally seek opportunities to hone their skills in the classroom should be continued, and furthermore, a series of ready-reference booklets could be developed to complement in-semester learning and assist in making the transition from learning to the workplace.

3. The modelling of instructional tactics should be extended to curriculum studies subjects so pre-service teachers can observe how tactics relate to specific teaching content and get the opportunity to develop those tactics that are particularly applicable to the respective content areas.

SUGGESTIONS FOR FURTHER STUDY

There are several possible areas for further study that emerge from either the findings of this study, the gaps discovered or the literature.

A follow-up study which presents the same survey to the same sample group in this research at the exit point of their Bachelor of Education (Primary) course is one possibility. By tracking the students‟ numbers, it would be possible to determine if instructional self-efficacy and self-efficacy in other variables increased or decreased in the latter part of their course, and if so, by how much.

A second possibility would be to research how modelling could be effectively implemented in an on-line teacher education course. A study into the effectiveness of on-line professional development subjects and comparison of the instructional self-efficacy of pre-service teachers who study on-line against those who participate in face-to-face classes may be useful for providers of teacher education courses.

Another study could explore the role that school ethos and rapport with supervising teachers have on instructional self-efficacy in the classroom. The current study was delimited to building instructional self-efficacy within a tertiary learning environment. It could be interesting to complement it with a study that explores factors which build instructional self-efficacy in the classroom environment.

Lastly, this research reveals little about goal-setting as a means of increasing self-efficacy, even though it was a major contributor identified in research by Bandura (1986) and Csikszentmihalyi (1990). Therefore, a worthwhile study of the relationship between goal setting and self-efficacy could be conducted with pre-service teachers. The NSW Institute of Teachers GPTS could provide a useful framework for such a study.

RELEVANCE OF THE STUDY

This study has provided valuable information that can be used to improve the professional development component of the Bachelor of Education (Primary) course; one of the aims of this project. Furthermore, this study may be useful for other subjects in the course and could also be of interest to other providers of teacher education programs who wish to monitor and improve the effectiveness of their courses. The findings on vicarious and enactive modelling have a wider application and extend to all educational settings and all levels. They are of particular interest to teachers in Key Learning Areas where the transfer of skills is a desired outcome.

This study has also noted that there is a positive correlation between pre-service teachers‟ perceptions of their ability to manage classes and their instructional self efficacy in teaching English and Mathematics.

OVERVIEW

This study concludes that the inclusion of vicarious and enactive learning experiences, accompanied by opportunities for reflection and feedback within a safe and supportive social environment, is conducive to building the instructional self-efficacy of pre-service teachers. Furthermore, it maintains that sound development in this area of the course will have a flow-on effect into other elements of the Graduate Professional

Teaching Standards (planning, communication, management), which in turn, also impact on self-efficacy in instructional tactics. The study provides evidence that the Bachelor of Education (Primary) course structure is pedagogically sound and suggests that the inclusion of self-modelling, development of instructional tactic booklets, and more intentional goal-setting within the Institute of Teachers framework could further strengthen the course by raising the self-efficacy of pre-service teachers even further. This, consequently, could lead to improved performance, benefitting the pre-service teachers, the course provider and the schools who employ its graduates.

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APPENDICES

APPENDIX 1

INSTRUCTIONAL TACTICS CHECKLIST

As used by pre-service teacher during professional experience in schools

INSTRUCTIONAL TACTICS CHECKLIST EDPP27100

DATE	KLA	LESSON TOPIC/CONTENT	Informing	Explaining	Narrating	Demonstrating	Displaying	Discussing	Questioning	Discussion	Object Lesson	COOPERATIVE LEARNING							Values	Other
												Jig-saw	Pairs Compare	Match Mind	Round Robin	Round table	Numbered heads	Think Pair Share		

APPENDIX 2

INFORMATION SHEET FOR PARTICIPANTS

The impact of pre-service teachers' perceptions of self-efficacy in relation to instructional tactics: a sequential study

INFORMATION STATEMENT

Invitation
You are invited to participate in the research project identified above which is being conducted by Mrs Beverly Christian from the Faculty of Education, Avondale College.

What is the purpose of the study?
The purpose of the study is to determine the perceptions of the effectiveness of the Professional Development and Experience units of the Bachelor of Education (Primary) course on developing self-efficacy in pre-service teachers with an aim to inform and improve the teaching of pedagogy in these units.

Due to the relevance of this research topic to the broader educational community, the results of this research may lead to a publication. Should this be the case, the identities of the participants will not be revealed.

Who can participate in the study?
Pre-service teachers enrolled in the Professional Development and Experience units EDPP27100, EDPP37000 and EDPP37600 over consecutive years are invited to participate in the study.

What choices do you have?
Participation in the study is both voluntary and confidential. Consent to participate in focus groups will be by attendance, and consent to participate in the survey will be indicated by completing the survey and returning it to the table as you leave the room. Participants can withdraw at any time without disadvantage. Should you not choose to participate in the study, simply return the uncompleted form.

What would you be asked to do?
The data collection for this research will occur over a two year period. During this time you would be asked to participate in a focus group and engage in a group discussion of 30 minutes duration. This discussion will be audio-taped. You would also be asked to complete two identical survey forms; approximately 18 months apart. Each survey should take around 10 minutes of class time to complete.

Further information
Should you have any further questions, please contact Mrs Beverly Christian.

This research project has been approved by the Avondale College Human Research Ethics Committee (HREC). Avondale College requires that all participants are informed that if they have any complaint concerning the manner in which this research project is conducted it may be given to the researcher, or if an independent person is preferred, to the College's HREC secretary, Avondale College, P.O. Box 19, Cooranbong, NSW 2265 or phone (02) 4980 2121 or fax (02) 5980 2117 or email: research.ethics @avondale.edu.au

APPENDIX 3

SURVEY QUESTIONNAIRE

AVONDALE COLLEGE
Faculty of Education
PP 370 INSTRUCTIONAL SKILLS QUESTIONNAIRE

This questionnaire is part of some research aimed at finding out how much an individual's confidence in their ability to adopt certain teaching roles affects their performance in the classroom.

You will be asked questions about your perception of yourself as a student, and yourself as a classroom teacher in the areas of content, instructional tactics and management

Your answers are important and will help improve the quality of the Professional Development and Experience component of the Bachelor of Education (Primary) course.

Please complete the following details correctly. Your student number will be used for tracking purposes only, not for identification.

Student number: _____ Age: _____ Gender: Male Female

You will be asked to circle the responses which most closely match a series of given statements. The possible responses are as follows.

POSSIBLE RESPONSES					
Totally Disagree **1**	*Disagree* **2**	*Mildly Disagree* **3**	*Mildly Agree* **4**	*Agree* **5**	*Totally Agree* **6**

Thank you for you participation.

Bev Christian

Please answer questions 1-6 from your perspective as a <u>student</u> enrolled in the subject Professional Development and Experience IIIA. Please circle the response which is the best match for the given statement about your own academic performance.

POSSIBLE RESPONSES					
Totally Disagree **1**	*Disagree* **2**	*Mildly Disagree* **3**	*Mildly Agree* **4**	*Agree* **5**	*Totally Agree* **6**

		Totally Disagree					*Totally Agree*
Q1.	I enjoy the assessment tasks I am given in PP370	**1**	**2**	**3**	**4**	**5**	**6**
Q2.	I see PP370 assessment tasks as relevant to teaching practice	**1**	**2**	**3**	**4**	**5**	**6**
Q3.	I perform at distinction level or above on PP370 assessment tasks	**1**	**2**	**3**	**4**	**5**	**6**
Q4.	I prefer practical assessments to writing essays	**1**	**2**	**3**	**4**	**5**	**6**
Q5.	I use time efficiently when preparing assignments	**1**	**2**	**3**	**4**	**5**	**6**
Q6.	I believe that academic work is not my strength	**1**	**2**	**3**	**4**	**5**	**6**

Please answer questions 7-50 from your perspective as a <u>pre-service teacher.</u> Base your answers on previous Professional Experience sessions.

POSSIBLE RESPONSES

Totally Disagree	*Disagree*	*Mildly Disagree*	*Mildly Agree*	*Agree*	*Totally Agree*
1	***2***	***3***	***4***	***5***	***6***

		Totally Disagree					*Totally Agree*
Q7.	I enjoy teaching English	**1**	**2**	**3**	**4**	**5**	**6**
Q8.	I put considerable time into planning lessons/units of work	**1**	**2**	**3**	**4**	**5**	**6**
Q9.	I promote a positive class ethos	**1**	**2**	**3**	**4**	**5**	**6**
Q10.	I enjoy reading for my own pleasure	**1**	**2**	**3**	**4**	**5**	**6**
Q11.	I perceive that my best lessons do not follow my planned lesson	**1**	**2**	**3**	**4**	**5**	**6**
Q12.	I think detailed planning is a waste of time	**1**	**2**	**3**	**4**	**5**	**6**
Q13.	I enjoy seeking out information for use in lesson/units	**1**	**2**	**3**	**4**	**5**	**6**
Q14.	I feel 'in control' of the class when I am teaching	**1**	**2**	**3**	**4**	**5**	**6**
Q15.	I refer to curriculum documents to assist my lesson delivery	**1**	**2**	**3**	**4**	**5**	**6**
Q16.	I lead discussions effectively	**1**	**2**	**3**	**4**	**5**	**6**

		Totally Disagree					*Totally Agree*
Q17.	I use questioning effectively	**1**	**2**	**3**	**4**	**5**	**6**
Q18.	I agree with my supervisor's evaluation of my content knowledge	**1**	**2**	**3**	**4**	**5**	**6**
Q19.	I use computers to assist with lesson planning	**1**	**2**	**3**	**4**	**5**	**6**
Q20.	I am an accurate judge of how well a lesson has been received	**1**	**2**	**3**	**4**	**5**	**6**
Q21.	I am generally confident teaching Mathematics	**1**	**2**	**3**	**4**	**5**	**6**
Q22.	I am aware of student behaviour when teaching	**1**	**2**	**3**	**4**	**5**	**6**
Q23.	I support my teaching with a wide variety of resources/materials	**1**	**2**	**3**	**4**	**5**	**6**
Q24.	I dislike teaching Stage 3 Mathematics	**1**	**2**	**3**	**4**	**5**	**6**
Q25.	I follow my lesson plans carefully when I am teaching	**1**	**2**	**3**	**4**	**5**	**6**
Q26.	I am generally confident teaching English	**1**	**2**	**3**	**4**	**5**	**6**

		Totally Disagree					*Totally Agree*
Q27.	I often deviate from prepared lesson plans	**1**	**2**	**3**	**4**	**5**	**6**
Q28.	I maintain pupil interest when teaching	**1**	**2**	**3**	**4**	**5**	**6**
Q29.	I enjoy teaching grammar	**1**	**2**	**3**	**4**	**5**	**6**
Q30.	I make effective use of non-verbal communication	**1**	**2**	**3**	**4**	**5**	**6**
Q31.	I feel competent to teach a variety of text types	**1**	**2**	**3**	**4**	**5**	**6**
Q32.	I believe I could teach children to become proficient readers	**1**	**2**	**3**	**4**	**5**	**6**
Q33.	I feel comfortable with most areas of content I am given to teach	**1**	**2**	**3**	**4**	**5**	**6**
Q34.	I write detailed lesson plans	**1**	**2**	**3**	**4**	**5**	**6**
Q35.	I generally agree with my supervisor's evaluation of my rapport	**1**	**2**	**3**	**4**	**5**	**6**
Q36.	I worry I cannot teach mathematical concepts effectively	**1**	**2**	**3**	**4**	**5**	**6**

		Totally Disagree					*Totally Agree*
Q37.	I can competently teach all English skills	**1**	**2**	**3**	**4**	**5**	**6**
Q38.	I build positive relationships with my students	**1**	**2**	**3**	**4**	**5**	**6**
Q39.	I am confident working with primary curriculum documents	**1**	**2**	**3**	**4**	**5**	**6**
Q40.	I feel that students respond positively to my requests	**1**	**2**	**3**	**4**	**5**	**6**
Q41.	I use meta-language when teaching English	**1**	**2**	**3**	**4**	**5**	**6**
Q42.	I link new knowledge with prior learning in most lessons	**1**	**2**	**3**	**4**	**5**	**6**
Q43.	I enjoy teaching Mathematics	**1**	**2**	**3**	**4**	**5**	**6**
Q44.	I vary my teaching tactics	**1**	**2**	**3**	**4**	**5**	**6**
Q45.	I feel comfortable using technology in the classroom	**1**	**2**	**3**	**4**	**5**	**6**
Q46.	I model exemplary language	**1**	**2**	**3**	**4**	**5**	**6**
Q47.	I make learning purposeful	**1**	**2**	**3**	**4**	**5**	**6**
Q48.	I am not confident teaching some topics in Mathematics	**1**	**2**	**3**	**4**	**5**	**6**
Q49.	I generally agree with my supervisor's evaluation of my teaching	**1**	**2**	**3**	**4**	**5**	**6**
Q50.	I consider that I have very good general knowledge	**1**	**2**	**3**	**4**	**5**	**6**

Thank you for your participation in this questionnaire.